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MACWORLD

The Macintosh® Magazine December 1989 $3.95 Canada $4.95

HOW TO PROTECT YOUR DATA

All About Backup



8 BLACK & WHITE PAINT PROGRAMS COMPARED

HAVE FUN
Best Games of '89

NETWORK SPEEDUPS FOR YOUR BUSINESS

ARCHITECTS
What They're Doing with the Mac

CHRISTMAS GIFTS FOR THE MAC-LOVER

Some think there's no a
Microsoft applications. T
the same thing abo



Nobell Chem Revenue Potential

Product Portfolio Breakout

High Growth Markets	1989	1990	1991	1992
Medical Applications	15	25	40	60
Industrial Applications	30	39	46	51
Total	*45*	*64*	*86*	*111*
% of total	*55%*	*63%*	*68%*	*72%*
Mature Markets				
Defense Applications	36	38	40	42
% of total	*45%*	*37%*	*32%*	*28%*
Total Revenue	*81*	*102*	*126*	*15*

Nobell Chem

Report to the Board of Trustees

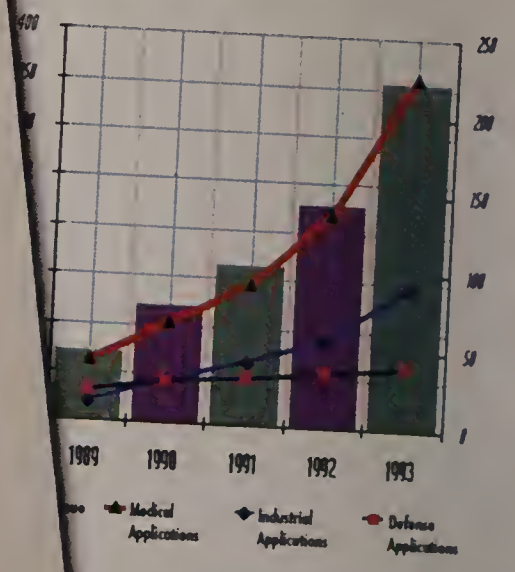
During the past twelve months, the Nobell Chem Corporation pulled far ahead of the competition, through the diverse and strategic marketing of its Nitro Glycerin compound.

Nitro Gly… …hich was discovered in 1847 by Ascanio Sobrero and commercially developed by …l Prize fame), has long been used in the manufacturing process of dynamite.

…now become a leading marketer of Nitro Glycerin in pill form, to aid …l uses. As a result of this development, Nobell Chem is now expanding …istribution channels.

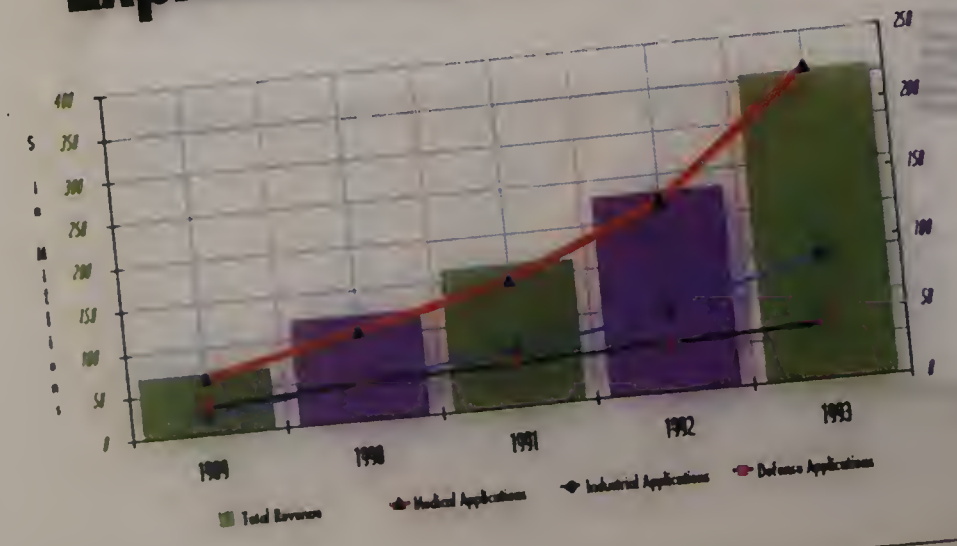
1989	1990	1991	1992	1993
15	25	40	60	85
30	39	46	51	72
36	38	40	42	44
81	*102*	*126*	*153*	*201*

Explosive Growth Potential



Nobell Chem

Explosive Growth Potential



dvantage to combining hen again, some thought ut nitro and glycerin.

If you own a Mac® you may already know what a phenomenally powerful piece of software Microsoft® Word is.

And, most likely, you're also aware of how powerful Microsoft Excel is. Well here's something you probably don't know:

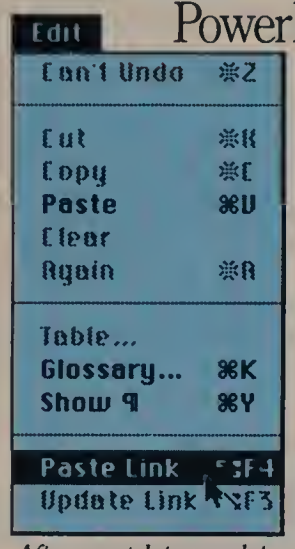
When Word and Microsoft Excel are combined, they're even *more* powerful. In fact, they're nothing short of explosive. Pun intended.

Because together Word and Microsoft Excel allow you to exploit the Macintosh®'s operating system in a way that has never been possible before.

We call this unprecedented feature "warm links." But you'll be more inclined to call it the best thing for revising documents since white out.

Here's how warm links works. Imagine it's the end of the day and tomorrow's the BIG presentation. You've been working with the sales manager to incorporate his Microsoft Excel projections into your report. You're finally done. But wait. Suddenly he makes one of his famous last-minute changes to the spreadsheet.

This is where warm links saves the day (or the hour). No more antiquated manual moves of opening and closing your document, cutting, pasting and praying. With warm links, you simply open your Word document and select Update Link. Word automatically finds the latest Excel data and updates your report. It's as simple as it sounds.

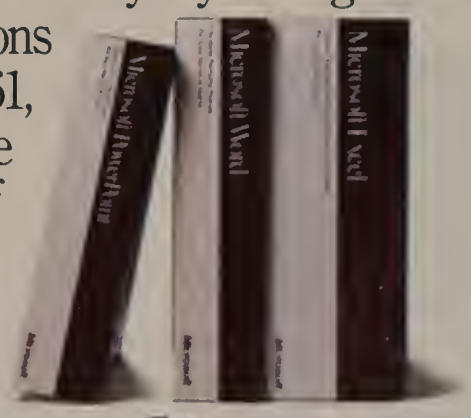


After you update your data in Microsoft Excel, select "update link" from Word's edit menu, and the change will automatically appear elsewhere.

Of course, because we are talking about the BIG presentation here, you'll want to go the extra step and blow them away. Enter Microsoft PowerPoint®. It's the easiest way to create attention-getting overheads and slides in black and white or color. Just cut and paste data from Word or Microsoft Excel into your presentation, draw, color, shadow, and take a bow.

As you probably know, Microsoft and the Macintosh have an unusually close relationship. We've been involved with the Mac since the beginning. Which means we know how to get the most out of it, now. So, if you want to coax ever more capability from your Macintosh, depend on these and the rest of the Microsoft line of business applications, that are always designed to get a powerful reaction from each other. And your Macintosh.

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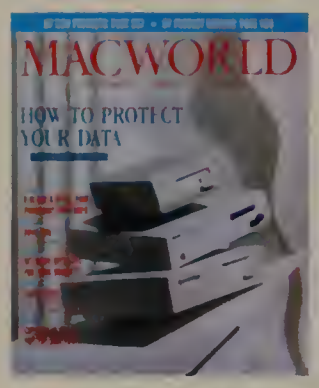
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MACWORLD

The Macintosh® Magazine December 1989



Of the six types of tape drives we tested, we liked the Teac units best for backing up single-user hard disks. Shown here are models from Everex's EMAC division, Ruby Systems, and Microtech. For complete benchmark results, see page 144. (Photo by Mark Johann.)

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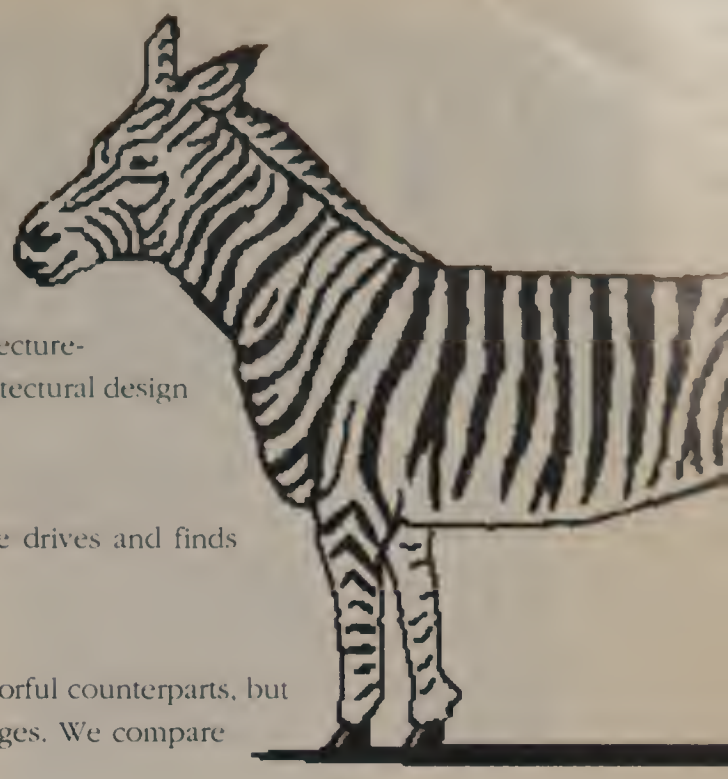
■ **Adobe Readies Type Manager** Good-bye, jaggies. ■ **Apple Offers Rebates, Trial of Hardware and Software** Big end-of-year promotion. ■ **Portable CD ROM Reader Weighs Less Than 3 Pounds** And it's battery-powered. ■ **Play It Again, Scott** RagTime 3.0 stuffed with new features. ■ **Perception's Greatest Hits** Using HyperCard to study the mind. ■ **Illustrator 88: The Books** We review three of the latest. ■ **Barco, Radius Introduce Color Calibrators** Where accuracy is a must. ■ **HP Color Printer and Interface Support 32-Bit QuickDraw** PaintJet your wagon. ■ **Narrowing the Information Gap** Solving a Mac-mainframe problem. ■ **Turning Numbers into Art** FoxGraph/Mac will make it fun. ■ **A Slew of Erasable Optical Drives Materializes** Hundreds of archival megabytes. ■ **Big Statistics for Little Computers** SPSS for the Mac. ■ **When TV Meets High-Tech** At Apple's corporate studio. ■ **MicroTV Supports Soaps on a Mac** Watch *Jeopardy* while searching your database. ■ **The Closer Look** Aperture manages data and facilities. ■ **Jasmine Introduces High-Performance Hard Disks** 130MB and 180MB. ■ **Reader Survey: Networking** Our readers are well connected.

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What should you get that special Macophile for Christmas? See page 176.



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By Oliver R. Witte / With the help of 2-D, 3-D, and architecture-specific programs, the Mac is finding a niche in the architectural design studio.

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By Tom Negrino/ Macworld Labs tests six types of tape drives and finds several winners.

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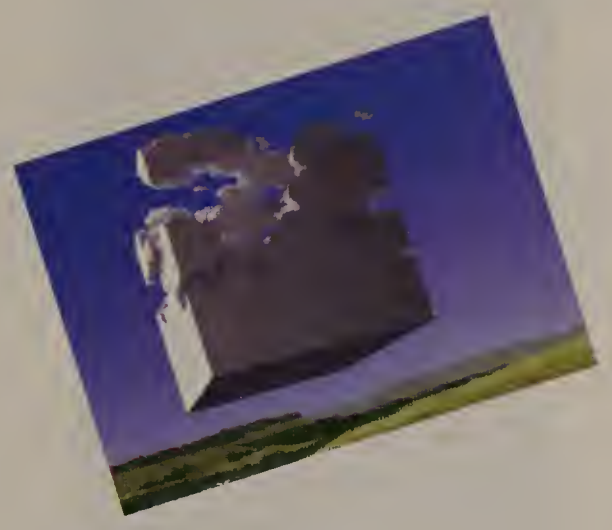
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Page 1

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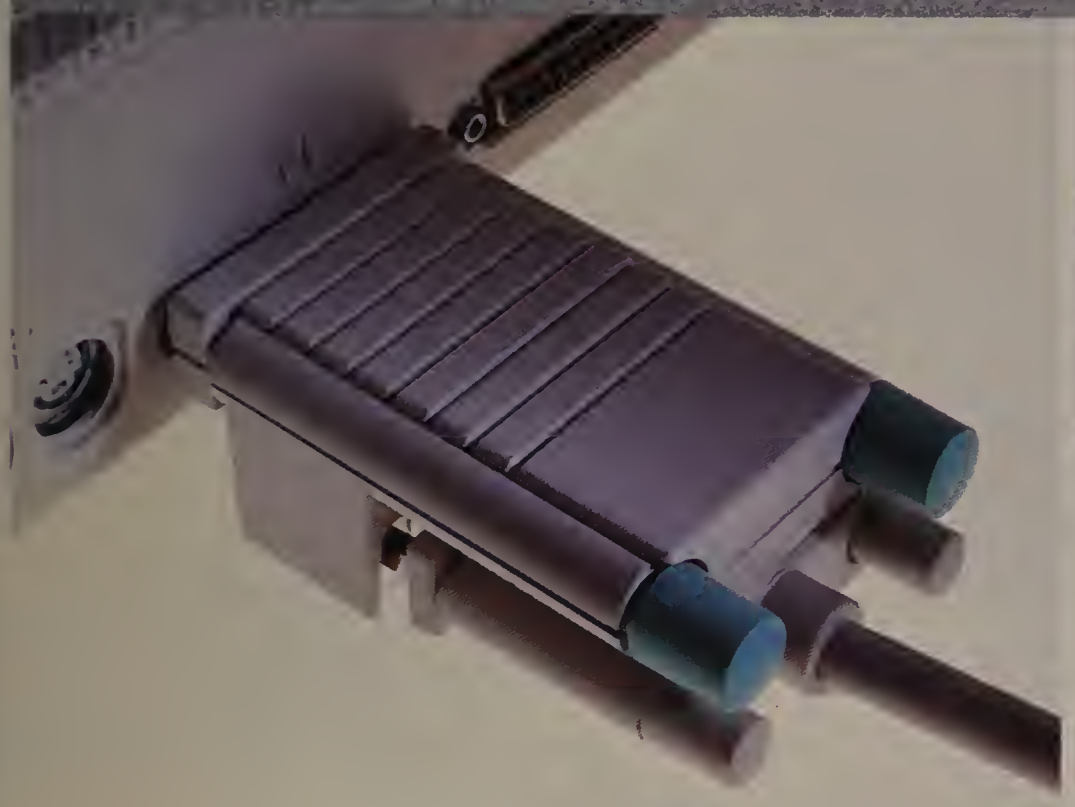
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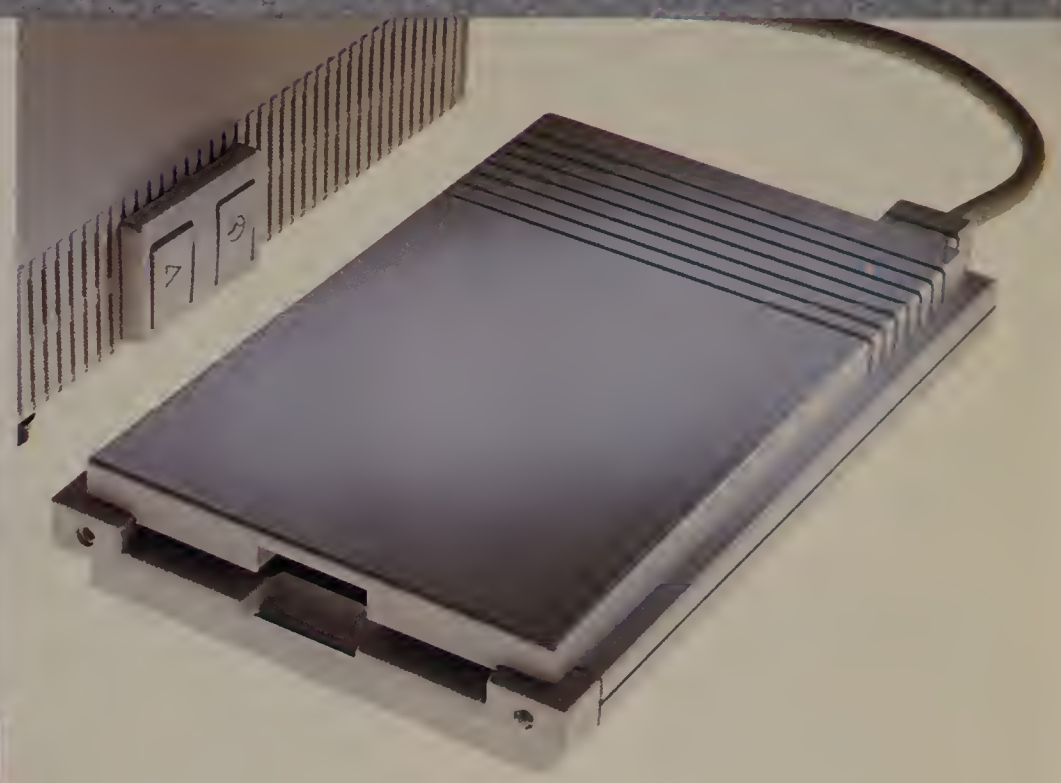
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Includes Silverlining,™ Silverserver,™ 5 mb of public domain software, Cordura carrying case and 30 day money back guarantee.

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Size	2¾×6×9 4.2 lbs	1.6 times larger	1.4 times larger
Warranty	5 years	2 years	2 years
MacWorld Says	"Cirrus drives include an outstanding set of utilities"		

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MacWorld, May 1989.



19" Color Systems from $4399.95

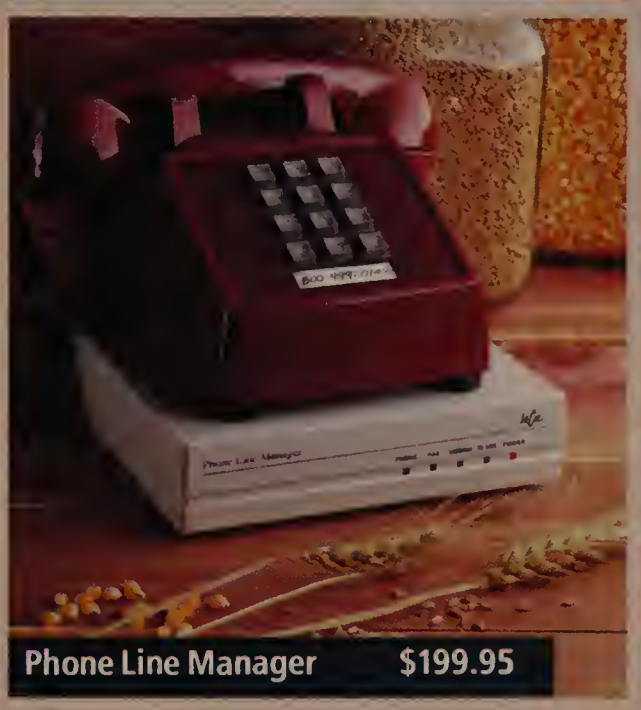


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Questions and Quick Tips Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to: Quick Tips, Lon Poole.

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Software Ventures presents the all new 1990 model:

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A "Stunning" Achievement in Software Engineering

The software that takes the hassle out of telecommunications. Like a finely crafted European touring sedan, MicroPhone II offers you unsurpassed power and allows you to communicate with style and agility.

Here are seven reasons why, if you're serious about telecommunications, you should consider owning MicroPhone II:

Power train. MicroPhone II is charged by the most powerful scripting engine for telecommunications, offering variables, string and math functions, arrays and file manipulation. You develop scripts with either the program's learn mode or its point-and-click script editor.

Design. Surprisingly, with all its unparalleled power, MicroPhone II is simple to use. Menus, dialog boxes and on-screen controls are well organized and pleasant to look at. Its "outstanding" manual is easy to read, clearly laid out and contains a thorough index.

Speed. Routinely clocked at 18,000 bits per second over ordinary telephone lines, MicroPhone II is the fastest telecom software around. Its file transfer protocols — XMODEM, 1K XMODEM, YMODEM, YMODEM-G, Kermit and ZMODEM — are all optimized to make your files fly across the country or around the world. The intelligent ZMODEM negotiates the most treacherous channels of a packet-switched network and resumes broken transfers with no loss of data.

Color options. MicroPhone II lets you assign color icons to your scripts, thus turning the *icon bar,* shown here, into your control panel. The icon bar can be scrolled,



resized and placed vertically or horizontally anywhere on the screen, awaiting your next click. Choose icons from the large collection provided with the software, or create your own.

Cruise control. Flexible scripting means that MicroPhone II can run on *automatic* while you're taking care of other important business. Whether collecting your electronic mail in the background, or calling Paris at midnight to transmit the daily sales report in French, the program is always at your service, saving you time and money.

Reliability. Because Software Ventures' engineers value your time on-line, they spend countless hours applying the most rigorous testing procedures to ensure that the program is crash-resistant. In the words of *The Macintosh Buyer's Guide,* MicroPhone II is "the most reliable of all the telecom programs we tested."

Test drive. Software Ventures so firmly believes in its superior technology that it gives you an unprecedented chance to *test drive MicroPhone II for 30 days risk free.* If for any reason you wish to return the program, you may do so for a full refund of your purchase price directly from Software Ventures — no questions asked.

But enough talk. Start using MicroPhone II today and find out for yourself why Jim Seymour and John Dvorak are the great communicators. After all, having invested all this money in the best hardware in the world, don't you deserve the best software?

Jim Seymour:
"... arguably the best communications software ever written."
John C. Dvorak:
"... stunning. Fast, slick; it does everything except slice bread."

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Easier Done.

1.



It's easy to get your hands on Adobe Type Manager™ at your nearest Adobe Authorized Dealer. And at $99, it's hard to pass up.

2.

It's even easier to install Adobe Type Manager. Just a few mouse clicks and your Macintosh® display will look better than ever.



3.

But the easiest part of all is seeing how Adobe Type Manager improves your ImageWriter® text. Just command it to print and watch what happens.

These unretouched photographs make it easy to see what a difference Adobe Type Manager makes.

Than Said.

IF YOU HAVEN'T read the page on the left, please do.

We'll wait.

Welcome back. You now know everything you need to know to use Adobe Type Manager.

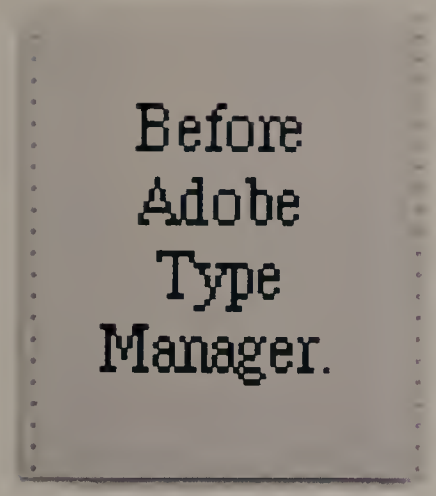
But if you still need to know more, allow us to elaborate; although it's not going to be as easy as one, two, three.

Because to understand how and why Adobe Type Manager was created, you'll have to understand what came before it.

Prior to 1984, most people thought of computers as excessively complicated, overly technical and, in most cases, far too intimidating.

But that all changed with the computer called Macintosh.

The introduction of the Macintosh was followed a year later by the arrival of the LaserWriter,* the first laser printer to rely on a completely new "page description language." The PostScript* language from Adobe Systems.



Before Adobe Type Manager, if you had a low-cost printer, you had to settle for low-quality output. But now this is just a page from the past.

Suddenly, the desktop publishing revolution was born.

Simply stated, PostScript stores descriptions of font characters as smooth outlines comprised of mathematical formulas, rather than the more typical bitmaps. So, no matter how jagged the type might look on a Macintosh screen, it comes out crisp and clean on a PostScript-equipped laser printer.

To say this new technology changed the face of computing would be a monumental understatement. Yet, the initial excitement about desktop publishing has now given way to higher expectations from Macintosh users everywhere.

Users just like you.



Adobe Type Manager puts Adobe's industry-standard PostScript language technology right on your display—where it's easy to see there really is no comparison.

No longer is it simply enough to generate different type styles and sizes on your Macintosh display and printed pages.

You now want the text on your displays to be clear, smooth and legible. You want what you see on your display to correspond as closely as possible to what the printed page will look like. And, most importantly, you want to be able to print high-quality text on your low-cost printers.

Adobe Type Manager satisfies all those demands.

When added to your system software (System 6.0 or later), it builds individual characters at any size from PostScript outline fonts—the same fonts used by PostScript printers.

Adobe Type Manager is actually based on the PostScript language's capability to create and scale fonts to different sizes. So it's very fast and very compact.

And, at just $99, it's very affordable. In fact, at that price, Adobe Type Manager probably offers more value than any other Macintosh software.

It's also very easy to install and operate.

You see, Adobe Type Manager is completely transparent to both you and your software applications.

So all you'll see is a better image.

Once it's installed in your System Folder, Adobe Type Manager intercepts QuickDraw™ font requests and generates the screen bitmaps (at the requested size) from a PostScript outline font. So, whether your text is regular, bold or italic, it looks smooth and readable from the largest point sizes to the smallest.

Then, when you print to your Apple ImageWriter or Hewlett-Packard DeskWriter, Adobe Type Manager automatically generates the requested printer font bitmap to produce beautiful, letter-quality text from any application.

That's because Adobe Type Manager is compatible with virtually all major Macintosh software—from programs for word processing and spreadsheets to page layout and presentations.

Which means it won't change the way you work.

Just the way you look.

And every Macintosh user can look better, because Adobe Type Manager requires just one megabyte of memory. That way, every Macintosh from a Plus to a IIcx can take advantage of its unique outline font technology.

Speaking of fonts, every copy of Adobe Type Manager includes high-quality outline versions of the 13 most popular fonts. They'll enable you to produce the kind of high-quality text from your ImageWriter or DeskWriter you thought only came out of a laser printer.

If you want to add more fonts, you can pick up the ATM™ Plus Pack, giving you the 22 additional outline fonts from Apple's LaserWriter IINT and IINTX laser printers. And, until December 31, 1989, ATM Plus Pack is priced at just $198.

Times*
Roman, *Italic*, **Bold** & ***Bold Italic***

Helvetica*
Regular, *Oblique*, **Bold** & ***Bold Oblique***

Courier
Medium, *Oblique*, **Bold** & ***Bold Oblique***

Symbol
ΑΒΧΔΕΦΓΗΙϑΚΛΜ ΝΟΠΘΡΣΤΥςΩΞΨΖ

Adobe Type Manager includes high-quality outline versions of these 13 most popular Macintosh fonts. You can also add any PostScript outline fonts, including those from the Adobe Type Library.

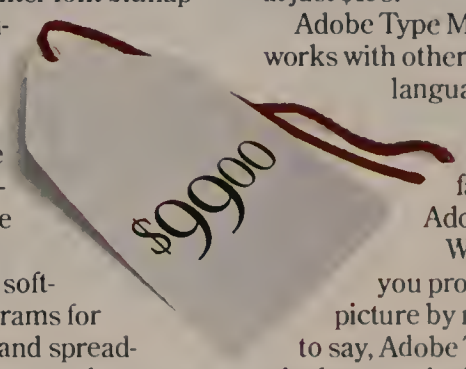
Adobe Type Manager also works with other Adobe PostScript language fonts, including the more than 500 typefaces from the Adobe* Type Library.

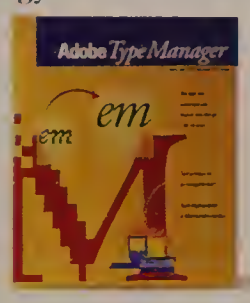
We could go on, but you probably have the picture by now. Suffice it to say, Adobe Type Manager is a lot better to look at than it is to read about.

Because, quite frankly, words don't do it justice.

So call us at 1-800-344-8335 (outside the U.S.A. and Canada, call your local distributor) for the name of your nearest Adobe Authorized Dealer.

When it comes to improving your image, it doesn't get any easier than this.





ADOBE
Adobe Systems Incorporated

Look for this symbol on computers, printers and other products that include PostScript software from Adobe Systems. It's your guarantee of quality and compatibility.



(Far Left) *Currently, the majority of personal computers, including Macintosh, store text characters as a pattern of dots (known as a bitmap).* (Middle Left) *But outline fonts—which were pioneered by Adobe—store the shapes of each character as easily-modified mathematical formulas.*

(Middle Right) *Scaling a bitmapped font is a less precise process, making the character less accurate and more difficult to read.* (Far Right) *When an outline font is used, the computer scales the outline to the precise size and shape, and fills it with dots. This results in a smoother, more accurate character.*

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InfoWorld Oct. 2, 1989

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MAC BULLETIN

INDUSTRY NOTES

1-Megabit DRAM Production Slows

In September major Japanese semiconductor makers such as Toshiba, Hitachi, and Mitsubishi Electric began trimming their output of 1-megabit dynamic random access memory (DRAM) chips by 10 percent. According to industry analysts, the production slowdown is an attempt to stave off a potential glut of DRAM that the companies believe is likely toward the end af the year. Japan naw supplies approximately 90 percent of the world's 1-megabit DRAM chips.

Claris Bundles MacWrite II Twice

Claris Corporation is offering, through January 30, two software bundles incorporating MacWrite II. The first bundle combines MacWrite II and MacDraw II, which together will have a suggested retail price of $499. The second bundle offers MacWrite II with FileMaker II, at a suggested retail price of $399 for both. Both bundles knock $150 off the normal retail price. Buyers of either bundle get a coupon good for $50 toward the purchase price of the third application.

Caere Goes Public

Caere, publisher of the OmniPage optical character recognition (OCR) package, has filed with the Securities and Exchange Commission for an initial public stock offering of 1.9 million shares of common stock. The campany expects the shares to sell for between $10 and $12. Caere can be reached at 408/395-7000.

Wanted: Software Pirates

The Saftware Publishers Assaciatian has installed a toll-free number to take reports of illegal software copying. Reported pirates will first be appraached with cease-and-desist letters, but the SPA has filed numerous lawsuits against violators. The number is 800/388-7478.

Quantum Hard Disks Failing

Apple has confirmed that an unusually high number of popular 40MB and 80MB hard disks it bought from Quantum Corporation are failing. A combination of high humidity, temperature, and other factors thicken the lubricant in some Quantum hard disks and cause the actuator to stick. The result is intermittent booting problems or a dialog box that says "Cannot Locate Finder." Other companies have also been affected. "Some of our customers are seeing the problem, some aren't," said a Quantum representative. "Our feeling is that it affects a very small percentage of drives overall." As a solution, Quantum has developed a revised PROM, which Apple is offering via its dealers through a repair program slated to run through October 1991. (Users who paid for out-of-warranty exchanges after April 1, 1989, may be reimbursed; for details they can call Apple customer relations at 408/252-2775.) Quantum says it is working with all of its customers to help them implement repair service. Current Macintosh disk production is unaffected and Apple says it "continues to have full confidence in Quantum products."

Driver Gives Mac Access to Low-Cost HP Printer

As Hewlett-Packard recently introduced its low-cost LaserJet IIP, Insight Development Corporation announced that an upgrade to its MacPrint printer driver software will let the printer work with the Mac. The LaserJet IIP lists for only $1495 and is widely expected to have a street price under $1000. The printer produces four pages per minute at 300 dpi and includes 512K of RAM, 14 internal fonts, a slot for a font/printer-emulation cartridge, and a 50-sheet adjustable input tray. Two other slots support memory upgrades.

Version 1.2 of MacPrint supports the LaserJet IIP, as well as other printers compatible with HP's PCL printer language. MacPrint version 1.2, which comes with four font families, will retail for $149. Current users can upgrade for $40. Both the printer and MacPrint 1.2 are available now. For more information, call HP at 800/752-0900, or Insight Development at 800/825-4115.

Virus Utilities Can't Examine or Fix Compressed Files

Warning: Antivirus utilities such as HJC's Virex, Symantec's SAM, and 1stAid Software's Anti-Virus Kit cannot detect or eliminate viruses in nonstandard file formats. This includes StuffIt archives, applications that come compressed (such as FoxBase+/Mac 2.0) or on multiple disks (such as PageMaker 3.0 and RagTime 3.0), and most backup utilities' formats. As Virex author Robert Woodhead puts it, **"If it's locked away in some special format, we can't touch it."** According to Anti-Virus Kit programmer Bob Reese, however, "If the virus is in a state that you can't detect then it can't infect in that state either—for example, inside a stuffed file. You'd have to unstuff the [application] and then execute it" by launching it. Before launching anything newly copied to your hard disk, you can check it for dormant viruses and eliminate them. When cleaning up an infected hard disk by restoring from a backup set, you have to check the hard disk from a locked system disk after restoring, but before opening any file on the hard disk; if the hard disk is still infected, the backup set is most likely infected even though virus utilities may not detect problems in the backup set. At press time, the publishers of the three antiviral utilities mentioned above planned to revise their documentation to explain this situation.

AppleLink Personal Edition Goes Online with New Name

The mysterious, now-you-see-it-now-you-don't fate of Apple's online service for the Macintosh-using public is finally resolved. **Quantum Computer Services is rolling its long-standing Apple II system into the new Mac system** and naming the combined service America Online. By early 1990 it will also

(continues)

INDUSTRY NOTES

MacroMind Offers Developer and Trainer Programs

MacroMind, maker of VideoWorks II and MacroMind Director animation/multimedia production software, will host a series of seminars for anyone who wishes to become a certified MacroMind developer or trainer. The four-day seminars will be held in San Francisco and New York City intermittently through January. For more information, call MacroMind at 415/442-0200.

Apple Names New President

Ian W. Diery, an 11-year veteran of Wang Laboratories, will be the new president of Apple Pacific, replacing Delbert W. Yocam, currently both president of Apple Pacific and Apple senior vice president. Yocam earlier announced his departure from Apple, effective November 27. Diery will be responsible for Apple's marketing, sales, and support operations in Australia, Canada, Japan, the Far East, and Latin America.

Macs to Help Build Space Station

Apple has won a contract to supply McDonnell Douglas Corporation's Space Systems Company (SSC) with 1000 Mac IIcx computers. Apple's SSC contract win follows NASA's purchase of up to 2500 Macs for the Johnson Space Center.

Fax Modems Shared

Solutions is developing FaxGate, an application that works with its BackFax fax modem software to let users on Microsoft Mail and QuickMail servers share any fax modem supported by BackFax. FaxGate will list for $245; BackFax lists for $245. For more information, contact Solutions at 802/865-9220.

Cheyenne Inks Distribution Agreements

Cheyenne Software has signed agreements with distributors Tech Data Corporation, Gates/F.A. Distributing, and PCDistributing to carry Cheyenne's line of network software. Cheyenne produces NetBack, a utility for Novell networks that does integrated backups and restorations of data on both Macintoshes and DOS machines on Novell networks.

accommodate IBM PCs. The new system boasts a color interface and provides multiplayer games, news and stock quotes, software libraries, mail and messaging, conferencing, and access to Apple's online technical library. Rates are $5.95 per month, including one hour online, and $10 per hour during the day or $5 per hour evenings and weekends. Access software is free with membership, and Quantum is offering a lifetime 20 percent discount to those who join before January 31. For more information, contact Quantum at 703/448-8700.

Consulair Opens 020/030 to Assembly Programmers

Consulair has announced a new version of its assembly language development system that gives programmers **access to the full addressing and complete instruction sets of the Motorola 68020 and 68030 processors.** All models of the Mac II and the SE/30 use either a 68020 or 68030. The new assembler supports the 020's 68881 math coprocessor and 68851 Paged Memory Management Unit, and the 030's 68882 math coprocessor. The Consulair 68020/030 Assembler lists for $130 and includes an editor, a linker, and examples. For more information, contact Consulair at 208/726-5846.

Persuasion, the Art Form

Among Persuasion 2.0's new features is the ability to import a Microsoft PowerPoint presentation saved in Scrapbook format, interpret its text, and convert it into a Persuasion outline. The new version can also automatically convert a presentation to another format (for example, from slides to overheads); generate and overlay multiple charts from one set of numbers; edit imported PICT and PICT2 files; produce superscript and subscript text; and transition effects between slides such as wipes or dissolves. Persuasion 2.0 is shipping at $495, and upgrades for users who bought Persuasion before August 10 will be $75. For more information, contact Aldus at 206/628-2320.

QuarkXPress Opens Doors to Guest Code

New capabilities can be added to QuarkXPress version 2.12 by simply dropping add-on programs, called QuarkXtras, into the Quark folder. **About 140 extensions are currently under development,** including utilities for character kerning; batch-processing books and other long documents; laying out information from a database; and even designing crossword puzzles; as well as filters for exchanging files with several minicomputer publishing systems. Prices for QuarkXtras range from $147 to $4000. Quark will make extensions for importing Microsoft Word 4.0 and MacWrite II available free of charge on the major electronic bulletin board systems. For more information, contact Quark at 303/934-2211.

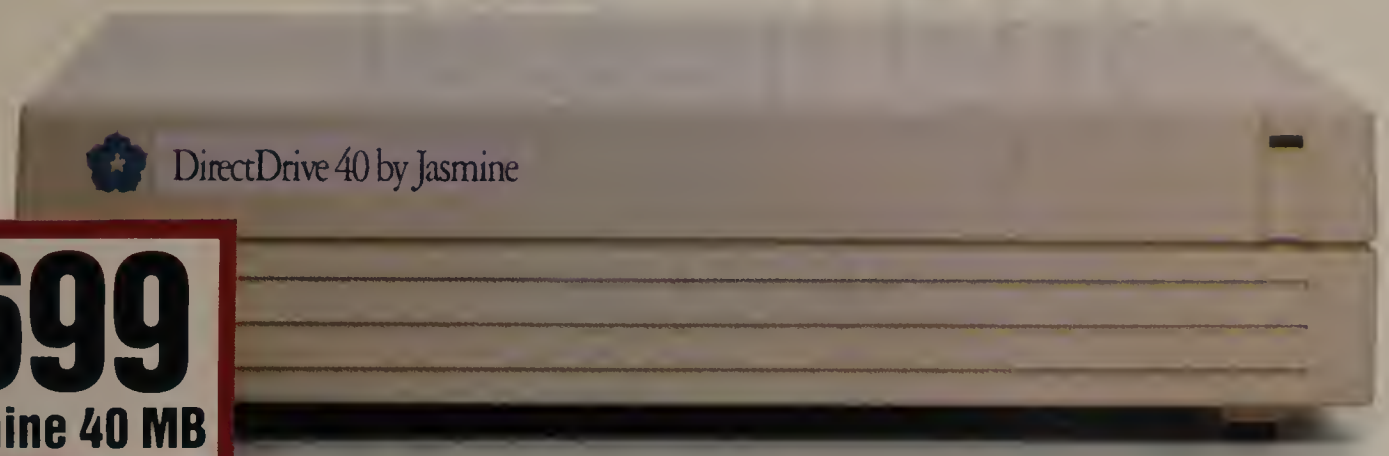
Wingz Adds Some New Feathers

Wingz 1.1 adds a number of minor features and offers **completely rewritten documentation, including a 600-page manual covering HyperScript.** Among the spreadsheet program's new features are the ability to read linked files when converting Excel or Lotus SYLK files, custom number formats that can be saved and reused, the ability to print directly from the page view, improved performance on the Mac Plus and SE, lockable objects including graphs, and many new commands in HyperScript. The list price remains $395. Registered users will receive version 1.1 with release notes for free, or can purchase a complete set of new documentation for less than $30. For more information, contact Informix at 913/492-3800.

Letraset Bids for Professional Market

Letraset is launching a new group of products aimed at sophisticated users. Dubbed Studio Line, it will include five packages plus add-ons. The central product is a $795 page-layout application called DesignStudio, which is upwardly compatible with ReadySetGo and adds many new features. The other Studio Line products include the already available ImageStudio ($495); the long-awaited ColorStudio, which will list for $1995; FontStudio, listing for $595, for creating typefaces and symbols; LetraStudio ($495), which is already available; and a collection of display typefaces that will be compatible with FontStudio and LetraStudio. Letraset plans to continue supporting ReadySetGo and StandOut, and will incorporate them in a second group of products to be called Business Line. For more information, contact Letraset at 201/845-6100. M

Users Won't Know The Difference.



$699
Jasmine 40 MB

But Buyers Will.



$499
Ehman 45 MB

According to a recent article in *MacWorld Magazine*, "There is very little to distinguish one hard drive from another, other than speed, software, and price." We agree.

Only a very few milliseconds of access speed separate the Jasmine and the Ehman hard disk drives, and both include utility software programs free. Both come with two year warranties and a 30-day money back guarantee. And both companies enjoy a reputation for manufacturing high-quality products.

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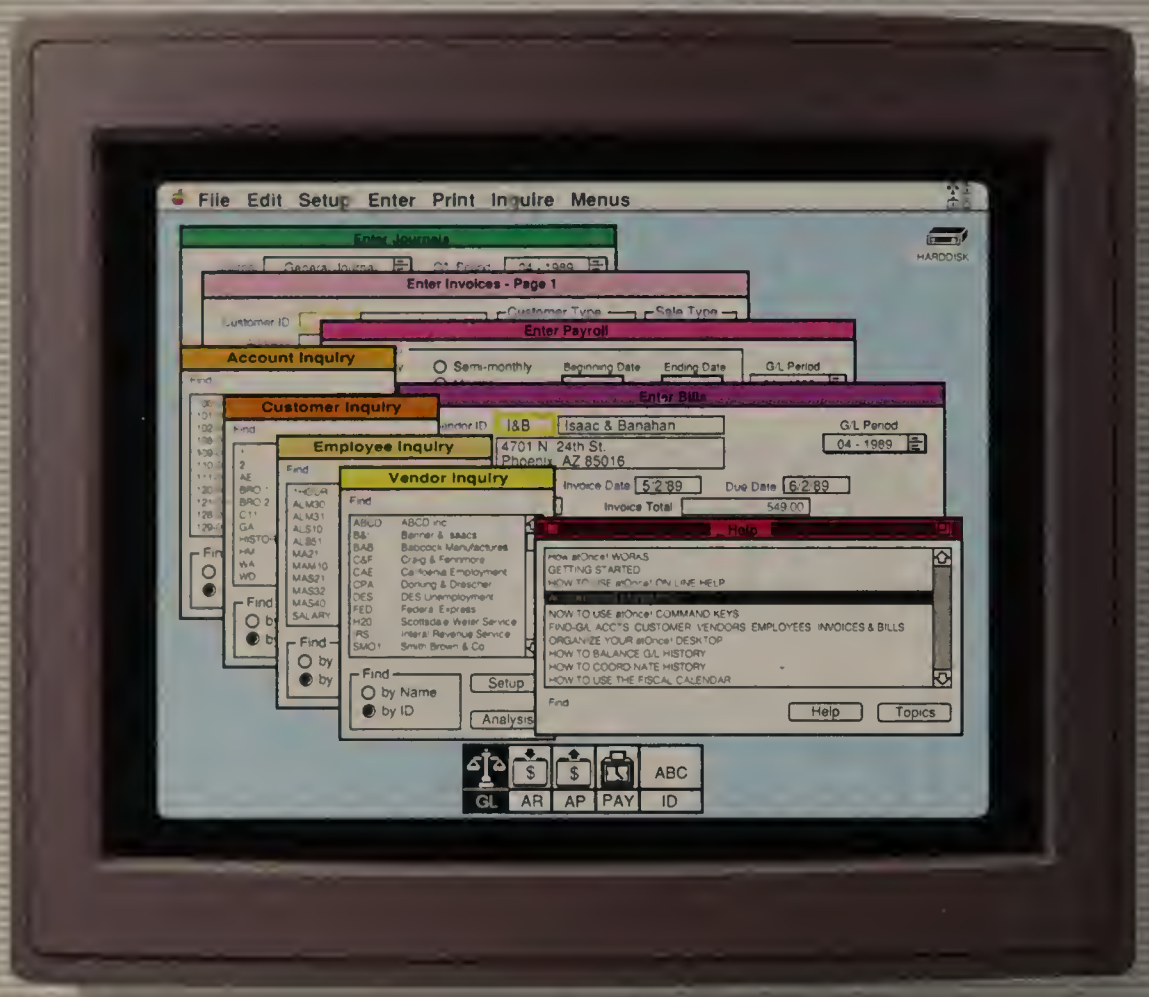
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The Trouble with Fonts

How Microsoft and Apple learned to live without PostScript (and how we'll have to suffer through it)

by Jerry Borrell

Over the space of a few days in September, the entire world of personal computing underwent the equivalent of an earthquake. And like any disaster, it's taking us all a while to determine exactly what took place and how much damage was done.

One evening during the week that shook the industry, Jim Davis (Apple's director of system software, product marketing) and I sat together munching on dinner at a Silicon Valley restaurant not far from the ever-expanding Apple campus. Jim quietly inquired as to whether I was going to the press conference the following day. Because the press conference announcing the Portable Mac and the Mac IIci was two days away, I assumed that Jim was asking if I would be attending the press event in Los Angeles celebrating the new machines.

"I'm not going to Los Angeles," said I. "No, I'm talking about the announcement at the airport Hilton tomorrow from Bill Gates and John Sculley," said Jim. If you know how corporate PR people treat public outings of CEOs such as Sculley and Gates, you'll understand the gravity with which I received this information. Ordinarily we get notice of their appearances akin to those for visiting royalty—R.S.V.P. invitations with several weeks' notice, and confirming phone calls. But this time Sculley and Gates had decided to hold their own event one day before a media blitz over two new Apple computers. Something was definitely up.



THE MICROSOFT POSTSCRIPT

As it turned out, the notice was so short that the airport Hilton event was lacking representatives from most major publications outside of the San Francisco Bay Area. Well, I missed both the Los Angeles and the airport announcements. But the next morning, at the Seybold Computer Publishing Conference in San Francisco, I went to the opening panel session, composed of Bill Gates, Steve Jobs, and John Warnock. (Just that morning I had noticed the latest copy of *Fortune* in my in-box. On the cover, ever so confident, was Steve Jobs poised next to cover type that said, in effect, How Steve Jobs Found Jesus with IBM, and Gave It to Bill Gates Real Good. Irony can be such a wonderful thing—Jobs's PR machine had cranked up some major press coverage about how he is succeeding in a big way.)

Actually, I was not prepared for what happened at the session, despite knowing the substance of the earlier Apple-Microsoft press event. I arrived at the conference just in time to hear Bill Gates talking about the Apple-Microsoft announcement. How the two had agreed to an exchange of basic technology. Apple is to license its new outline font–rendering technology to Microsoft, and the latter will share its page description language with Apple. (Microsoft had earlier bought a company called Bauer that arguably produced the best PostScript clone on the market. PR people say politely that it is a superset of PostScript's capabilities, all the better to avoid another lawsuit.) Finally, Gates indicated that third parties (type vendors and typesetter manufacturers) were lining up to work with the two companies. He said that the world would be a better, friendlier, more cost-effective place now that Apple and Microsoft would provide a more competitive market. (Tell that to your local service bureau or the Fortune 100 companies that have invested millions in PostScript fonts and typesetters.)

Gates was doing his best Martin Short imitation, head bobbing, smiling as though there were some internal conversation going on in his mind, and in general enjoying the mayhem that he was creating among the hundreds of attendees. As he described how the new Royal (Apple's name for its font format) fonts would appear in all copies of IBM's OS/2 and the advantages that would be created, the other two panelists were suffering. When the moderator called Gates's software the "Microsoft PostScript," he at once identified a source of trouble for us all and caused Adobe president John Warnock to put his head on the table.

(continues)

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Jobs took sidelong note of Warnock's reaction and remained passionless, staring out at the audience. It was a cartoon-like picture, missing only the bubble caption, the one saying "I wonder what my next move is?" For Jobs, you may recall, has tied the future of Next to the PostScript language for both printing and display. That timely *Fortune* cover was now beginning to appear Pyrrhic. Ill-timed. The kind of thing that can ruin a man's legend in his own time.

John Warnock's presentation followed, and it was, at the least, Shakespearean. He peered, Lear-like, down from the podium and predicted chaos. And unfortunately, in the passion of the moment, it appeared as though the announcement had caught him unawares. In reality, the issue of making the PostScript standard available at no cost to third-party developers has been a long-standing topic of debate at Adobe.



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Warnock proceeded to announce that Adobe would indeed make PostScript a public standard. (Afterward several people could be heard on the phones outside placing sell orders for Adobe stock.)

Warnock accurately stated that PostScript is too important a standard to abandon and told the audience that he would not allow the standard to dissipate into a quagmire of competing font-rendering and printer languages. It was as highly emotional a moment as I have seen in ten years of working with this industry. And only several years passing will tell if the moment was truly historic, or merely histrionic, a public argument.

Jobs's presentation contributed one useful insight into the dilemma being faced by the world of electronic publishing: it will take Royal two years to become as useful as PostScript is today. It took a lot of chutzpah, but Jobs also managed to announce that Apple was making a mistake, and claimed that IBM, the perpetual fat lady, would be the true determining factor in this market. It was a real treat to see Nick Donofrio, the president of the advanced workstation division of IBM, later go to the podium and successfully avoid saying whether his company would bless either Royal or PostScript. In other words, all options are being preserved.

The next morning I had breakfast with the president of Agfa Compugraphic, Ken Draeger, who, as leader of the largest typesetting equipment manufacturer in the United States, has credibility in these arenas. Ken shed some light on one behind-the-scenes issue when he pointed out that a certain loser in this fight has been Hewlett-Packard, which has lobbied long and hard for Microsoft to adopt its printer language, PCL. Agfa Compugraphic's Intellifont type format had also been considered by Microsoft, but it too was passed over. Nevertheless, Agfa Compugraphic stands to do well, as it plans to make Royal-format typesetters and to maintain its line of PostScript and Intellifont typesetters. Ken added a comment that the announcement was good for Macintosh users, but he wondered just what it would mean for IBM in the long term, if Microsoft succeeds in bringing

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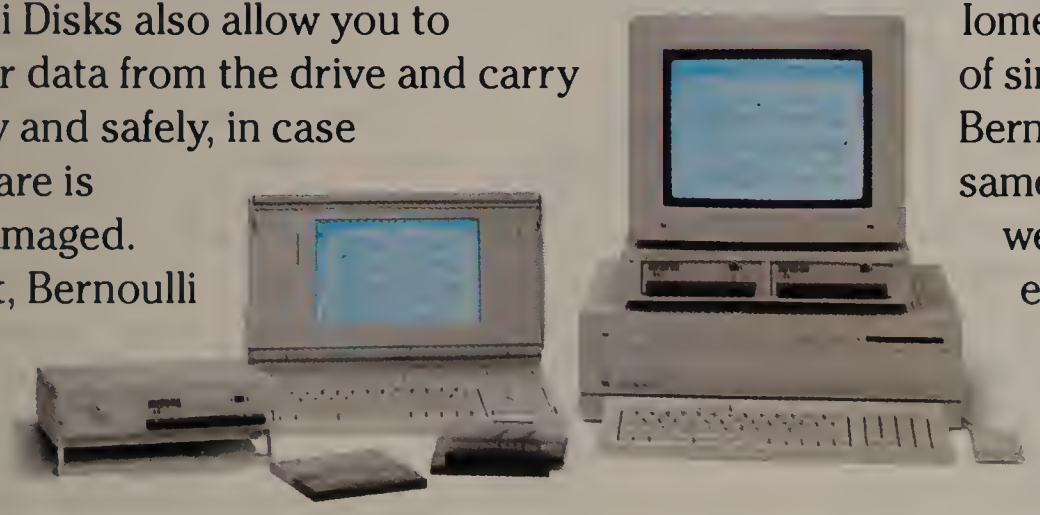
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IBM into this partnership and Royal is made available to OS/2 users.

SO WHAT'S IT ALL MEAN?

Despite the turmoil that the week's events may have engendered, they at least remind us that the personal computer industry remains alive and subject to change in the face of competing technology. It's possible that Apple and Microsoft will rethink their cross-licensing strategy, but not very likely. As TV weather reporters say, the forecast is mixed: two standards are likely, and we have every prospect of a long, painful transition.

What's it mean for Adobe? Adobe is producing Adobe Type Manager, a product that will allow all applications to have high-quality screen fonts at all point sizes. Just drop ATM in your System Folder and jaggy fonts will never appear again. If that sounds similar to what Apple has said it will do with Royal font rendering in System 7.0, you're right. Has any third-party developer succeeded long term in writing system software for a Mac? No.

Can PostScript fonts run on printers supporting the Royal font format? Yes. But the real question is, will they? Will Adobe develop a product that allows that to happen? Possibly. Does it have any other choice than to try? Yes. Will Apple assist Adobe? Not likely. Will Adobe develop fonts in the Royal format? Not likely. Will Adobe survive the loss of its lucrative royalties on PostScript? Yes, albeit as a different type of company. Will Adobe continue to be a strong developer for the Macintosh? Consult again later.

If Apple and Microsoft successfully adopt a PostScript clone as their standard, what will happen to PostScript? Who will determine what the standard is? If Adobe licenses PostScript, how can it maintain a standard when everyone will be able to modify PostScript willy-nilly? There's the rub. Unless PostScript or some PostScript-like product becomes a standard, we will devolve into the same kind of chaos as the printer marketplace on the IBM side of personal computers. Application developers will spend more time working on drivers for developers than on advancing technology. Shades of the PC market.

So fonts are changing. What does that mean for desktop publishing programs? Some developers are already looking at System 7.0 as though its code name were Freddy Kreuger. It means that developers, especially those who use their own print mechanisms and drivers (companies such as Aldus, Quark, and Letraset), will have major headaches. And that means you and I will be reduced to playing the role of beta testers. Imagine that. "We'll have a rev out real soon, Mr. Jones, that fixes those bugs that crash your system, prevent you from printing, won't let you cut and paste . . ." But in the end, DTP and other kinds of applications will be better for all of this, won't they? That's the idea, but it's still a good question. The crystal ball reads . . . Consult again later.

And one final question: Did Apple and Microsoft bury the hatchet on other matters before coming to this agreement? I wouldn't be surprised.



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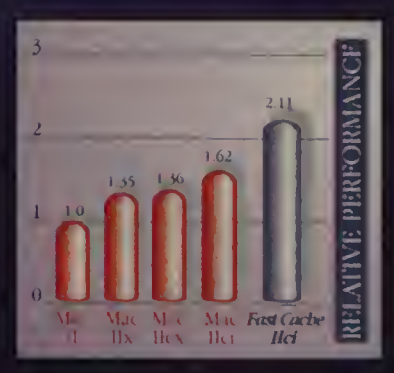
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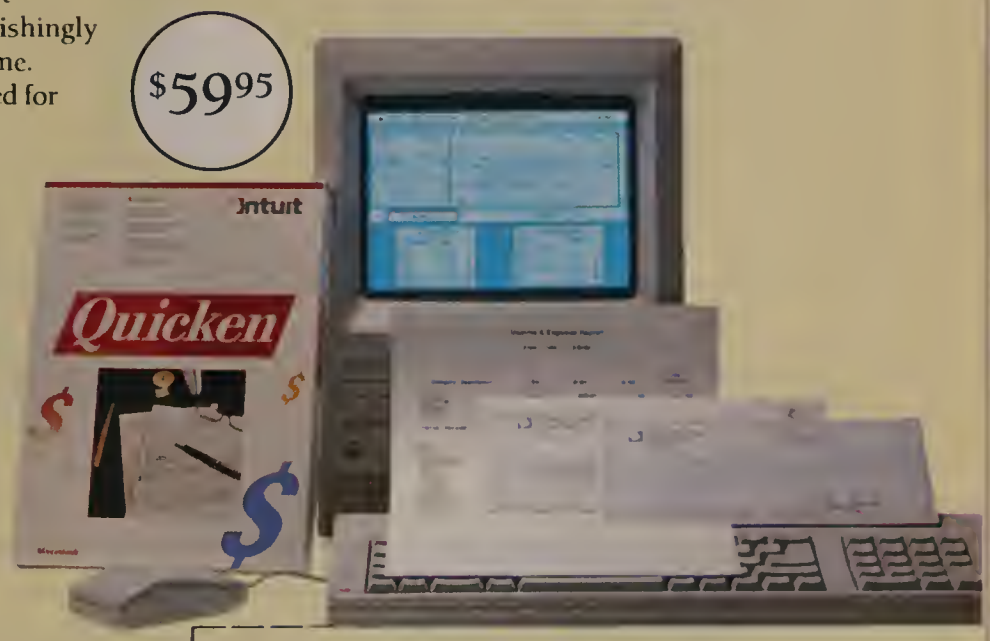
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LETTERS

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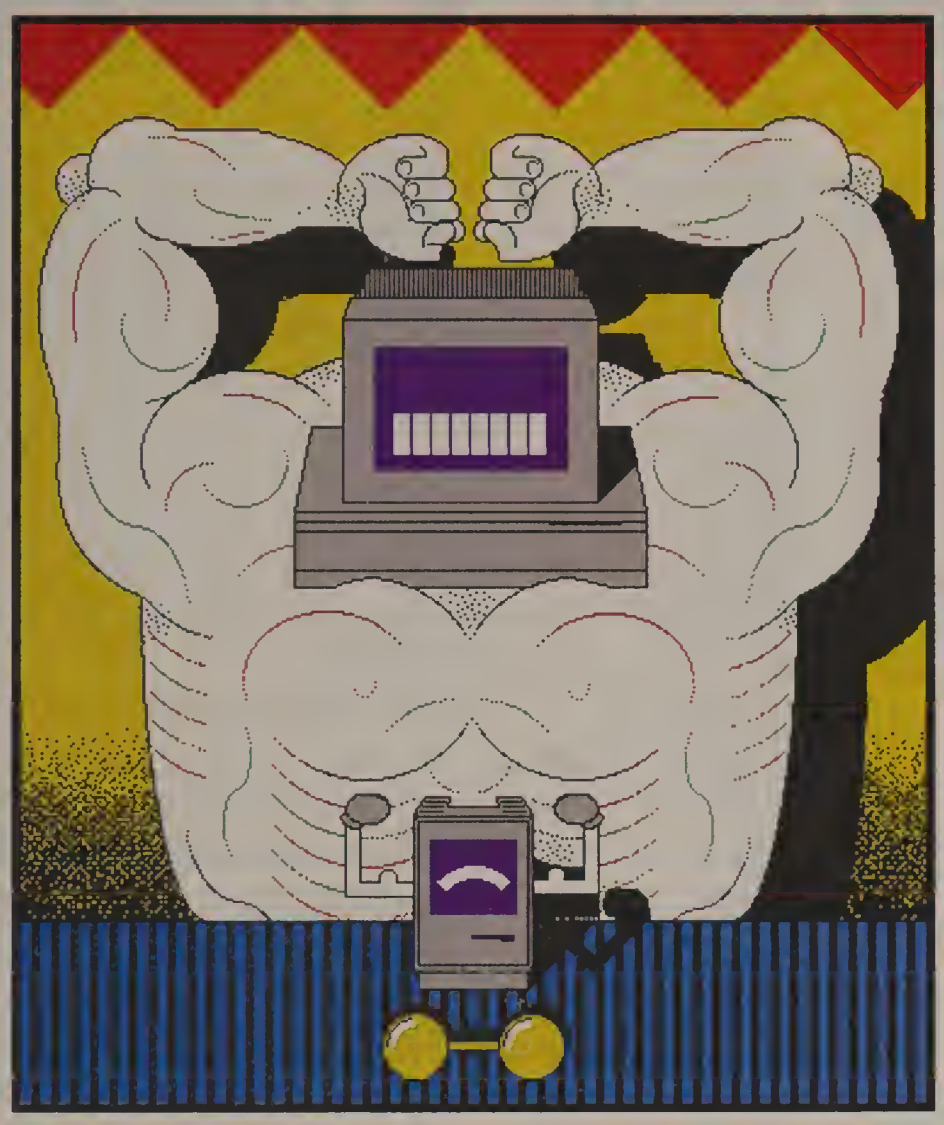
Why Jean-Louis Is Smiling

Why is Jean-Louis Gassée smiling on your August 1989 cover? Because he has successfully segregated the low-end Mac user (1MB RAM and less) from the big-bucks user, by the issuance of System 7.0. He knows where the gold is. Now the computer for the rest of the world will be the computer for the rest of the world with large bank accounts. This ersatz Joker has pulled another fast one on us computer hacks at large.

This wholesale planned obsolescence has permeated the software we use since the beginning and is now affecting the very hardware we cherish. It never really hit home until I installed System 6.0.2, but by then it was too late. Half my applications would not launch due to out-of-memory bombs. I experienced the great fund drainage so many others have faced while feverishly updating applications.

I supported the Macintosh when it was a lowly 128K pup and patiently waited through its initial gangliness. I even went so far as to purchase one of the first SEs to hit the market. Little did I realize that an even bigger dog—the Mac II in all its pedigreed glory—was tied to the lamppost around the corner. Imminent clones sporting cheaper price tags notwithstanding, recent events threatening to pollute the sanctity of Macintosh have caused me to revile those who were so bold as to steal the golden fleece. However, I find it difficult to defend Apple's continuing arrogance while I'm struggling with ID=25.

David F. Tongay
Tustin, California



MARK ULRICH

What About System 10?

Why all the hoopla about System 7.0, when the big news now is all about System 10? The ultimate in Mac technology, System 10 is scheduled for introduction as the Mac Odyssey in the year 2001. System 10 will be so hot that with the proper software, your Mac will be able to make corporate mergers, write novels and speeches on its own, and even walk your dog. Only one major drawback exists in this upcoming Apple Garden of Eden. Without a memory upgrade, your Mac won't be able to find its way back home before the dog does.

Unfortunately, the 16MB Mac Pzazz that you will have purchased in the year 2000 won't be capable of running System 10. To make it work, 32MB of RAM will be a must. The 32MB upgrade package should be available for about $1680. In the meantime, does anyone have a spare Mac Plus 2MB upgrade that will run System 7.0?

Kenneth E. Grabner
Notre Dame, Indiana

Corrections

The address for Multi-Tech Systems (Where to Buy, *July 1989), maker of MultiModem V32 and MultiModem 696E, is 2205 Woodale Dr., Mounds View, MN 55112; 612/785-3500; 800/328-9717 outside Minnesota.*

The address for RGB Technology (Where to Buy, *September 1989), maker of Videolink 400 and Videolink 400/Genlock, is 2550 Ninth St., Berkeley, CA 94710, 415/848-0180.*

The address for Genius Inc., maker of gigaPix, a device that digitally records Mac graphics on 8mm videotape (Where to Buy, *September 1989), is 3958 Van Noord Ave., Studio City, CA 91604, 818/905-8866.*

The Linotronic L200 has a maximum resolution of 1693 dpi, not 1270 ("At Your Service (Bureau)," October 1989).

The phone number for The Electronic Clip Art Company ("The Clip Art Buyer's Guide," (continues)

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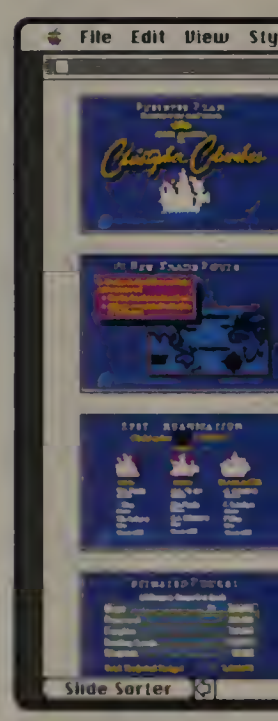
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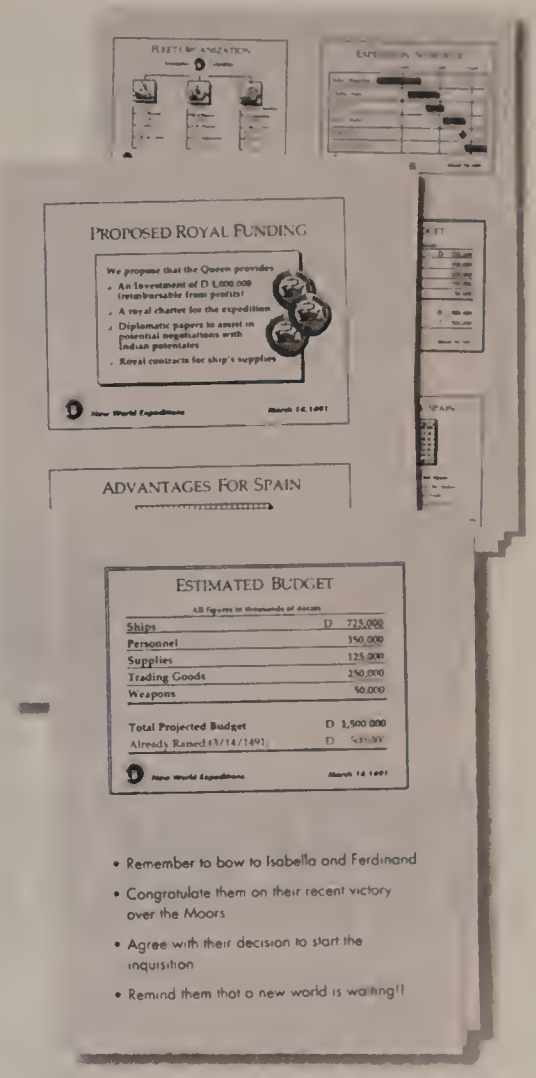
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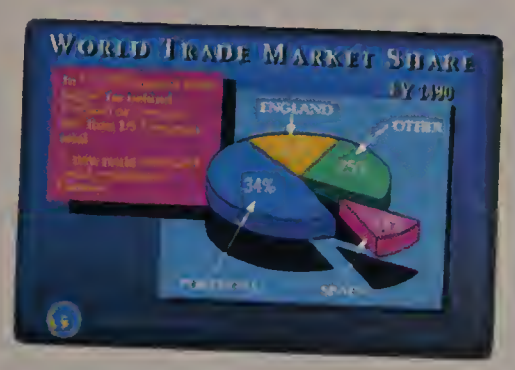
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SPAMM	Bravo Technologies 415/841-8552	$149.95	Speeds up arithmetic operations
SuperLaserSpool	SuperMac Technology 415/964-8884	$79.95	Provides background printing

Here is the information as it should have appeared for these three system-replacement utilities in the table on page 164 of the October 1989 issue ("Start with Utilities").

October 1989), publisher of The Electronic Clip Art Digest, *is 616/342-5461. Also the author meant to place a star by D.V. Franks (indicating a recommendation), whose artwork is shown in the October 1989 table of contents.*

. . . . . .

The Untold Story

Lon Poole's preview of System 7.0 was a masterpiece of clarity—a crystalline distillation of hundreds of pages of Apple techspeak. That said, I was struck by the words not dwelt upon, such as *HyperCard*. A couple of years ago, this was considered system software; parts of HyperCard were said to be destined for the next generation of Mac ROM.

Where is the all-commands-can-be-buttons support for all applications, or even a handy-dandy icon editor? Is a framework being laid for, say, universal "sticky notes"? Anything like a Find command with direct access to data forks and their text strings? Animation enhancements, perhaps as simple as a set of wipes and dissolves? Wider roles for XFCNs and XCMDs? Does the idea of distinct levels of user-empowerment apply anywhere in System 7.0, or in the stack-of-cards metaphor?

HyperCard's unique quirks aren't visible anywhere. System 7.0 is a leap in a different direction than was previously plotted. Has Apple outgrown its Hyper-active behavior?

But HyperCard isn't the only software path that seems to vanish in the woods. MacTerminal never appeared under the Claris label because Apple wanted to merge some of its functions into the Mac operating system. According to Claris. Little goodies like MacroMaker and the Map CDEV were offered as hints of wonders yet to come, and they evidently remain such. The long-hoped-for everyday user's ResEdit hasn't come on stage. The much-screamed-for evolution of Virus Rx into the foundations of an immune system for the Mac hasn't arrived either.

(continues)

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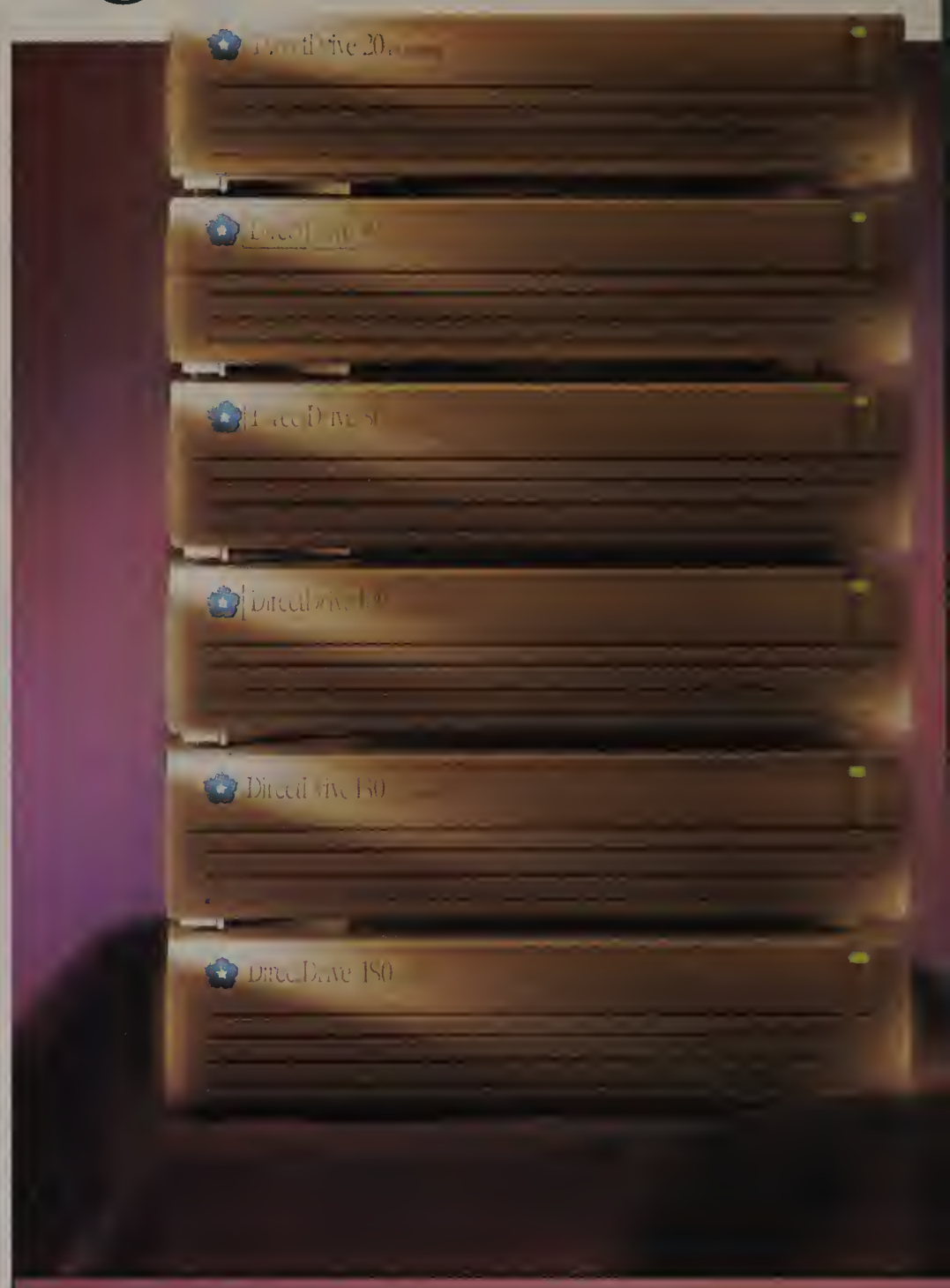
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The most interesting stories are often those not told. System 7.0 looks like it will be a journalistic cornucopia.
Pierce R. Butler
Gainesville, Florida

Computer Literacy for All

Both articles by Brita Meng [*MacWorld News*, April 1989] and Steven Levy [*The Iconoclast*, August 1989] on the Project Strive and Playing to Win programs were very much to the point. Computers will empower a generation of deprived kids, as well as offer adults the means to join or rejoin society with knowledge and dignity.

Another similar program is operated by Planned Parenthood of New York City in the Bronx at The Hub (212/292-8000), which is a comprehensive center for teens that provides computer training along with health and social services. As a board member who has watched the program in action, I can tell you it is one of the most exciting and empowering programs in New York.
Sarah A. Crane
Brooklyn, New York

Addressing the Issues

Thank you for your review of my programs Label Manager and Easy Envelopes Plus in your September 1989 issue ["Signed, Sealed, and Delivered"]. I would like to point out several inaccuracies, though. Neither program is published by Preferred Publishers; they're both distributed as shareware (Easy Envelopes Plus is $15 and Label Manager is $19.95).

Some of the confusion may have been caused by the fact that Preferred Publishers has just released a program I wrote called Direct Mail, a desk accessory that we're billing as the complete correspondence solution.
Andrew Welch

Film Recorder Controversy

In your film recorder comparison ["From Screen to Slide," July 1989], your incorrect use of the Mirus FilmPrinter resulted in an inaccurate evaluation and a misleading report to *Macworld* readers.

You stated that "the software is awkward to use" and "to set up your images you must go through more steps than with any other software." Mirus's Chooser Driver is a unique and easy-to-use approach to the slide-making process. You simply select the Mirus FilmPrinter from the Chooser, as you would a LaserWriter, and print directly from the software application. The statement, "The software won't run unless you have the FilmPrinter attached," is false. As with any Chooser-driven device, you select the FilmPrinter from the Chooser but need to attach the FilmPrinter only when actually imaging film.

Because you used ASA 100 film, your recording-time results were also misleading. Mirus is unique in its support of higher-speed film and recommends ASA 200 film, since it produces high-quality slides with 30 to 40 percent time savings over 100 ASA. Finally, contrary to your claim, the FilmPrinter does support 24-bit images—when using 32-bit QuickDraw and compatible software.
Jeff Wilbur
Mirus Corporation
Santa Clara, California

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The Mirus FilmPrinter offers numerous (and often confusing) settings, which must be rechecked before printing, yet there is no way to view all settings at once. To print PICT files from a variety of applications, you must go through the FilmPrinter's awkward batching process. Chooser-level printing is not a viable option with film recorders, since each image takes so long to print and ties up the Mac. And in spite of Mirus's claims, we could never get the software to run without the FilmPrinter attached. As to the issue of speed—all film recorders run faster with higher-speed film. We chose ASA 100 film because it provides a higher-quality image than does ASA 200. Finally, because 32-bit QuickDraw was not available when the article was written, we were unable to test the FilmPrinter's support of 24-bit images.—Ed.

Presentation Look-Alikes

Thom Hogan's column in the August issue about presentation programs ["The Show Must Go On," *State of the Mac*] struck a very tender nerve. After spending the last three months using and evaluating over a dozen presentation programs for both the PC and the Mac, I occasionally find my brain turning to guava jelly at the mere thought of a slide.

I agree with Hogan on several points. A good outliner does not make a good presentation tool. Audiovisual design has its own internal logic that can be guided by a good outline, but to rely too heavily on the outline form makes for very boring presentations. Nothing is more deadening, for an audience than some guy droning on while endless word slides slip by on the wall.

As for using the templates supplied with the better packages, there is one major fly in

(continues)

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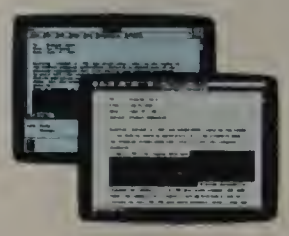
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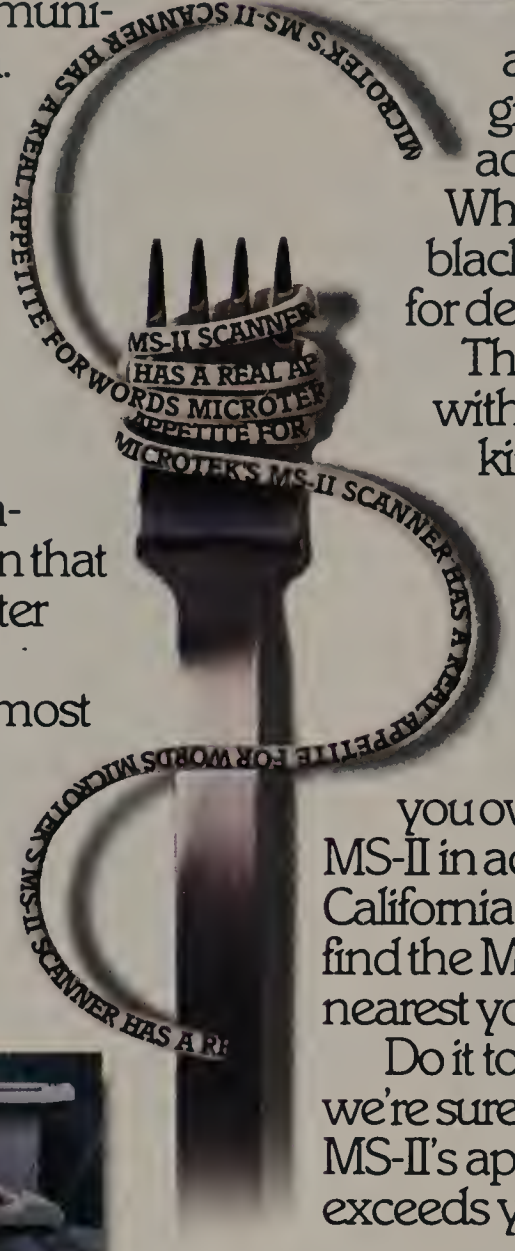


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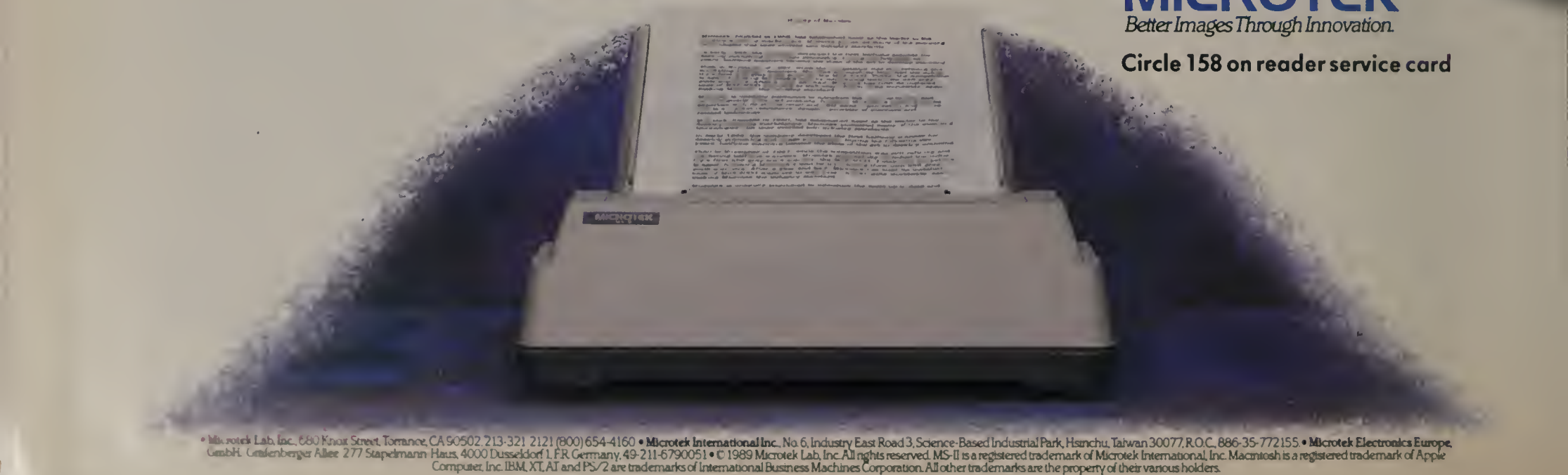




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that ointment: wait for the day when you attend a conference and six guys from six companies show up with six different presentations—all designed using the same Persuasion template. The audience won't be able to tell one from another, and the presenters will feel like they all showed up for the prom wearing the same dress with matching pumps. The point is, templates should be used as learning tools from which to develop one's own individual style.

Mike Talman
Corporate Images, Inc.
San Francisco, California

Color and Video

Although we agree with the basic premise of "The Proliferation of Buses" [*State of the Mac,* September 1989], we have managed to turn this potential problem into a major advantage. At the Macworld Expo in Boston, we exhibited a video card called ScuzzyGraph that works with four generations of Macs, including the SE, the Plus, the 512KE, and even the Lisa (Mac XL). In addition, the video card brings color capability to these black-and-white Macs.

Although virtually every Mac has a different backplane bus, there is a bus that's common to all Macs—the SCSI bus. Why not connect an intelligent external video card via the SCSI port, teach the microprocessor on the video card about QuickDraw, and write a small INIT file that sends QuickDraw commands to the video card via the SCSI bus? The card uses a standard bus with standard physical connectors and electrical signals. Graphics support is off-loaded from the Mac to a 40-megahertz graphics microprocessor.

When upgrading to a new Mac, you simply disconnect ScuzzyGraph from the old Mac and plug it in to the new one. Upgrading is a matter of reprogramming the microprocessor via an INIT. You can also upgrade monitors up to 1280 by 1024 on a 19-inch color monitor by adding more video memory to ScuzzyGraph.

So, Mr. Hogan, American ingenuity lives. You can now give your accelerated Mac something worth accelerating—large-screen color graphics.

Lee Otsubo
Aura Systems
Carlsbad, California

Lightning Labels

Your recent comparison of label software ("Signed, Sealed, and Delivered," September 1989) made no mention of one of the best products—Lightning Labels from MaxStax+. The review commended Mail Dex and FastLabel for their ability to rearrange fields from imported files, but Lightning Labels 2.0 can do the same thing—yet at $25, it's half the price of Mail Dex and one third the price of FastLabel. In addition, Lightning Labels has some features not found in other labeling software, such as the ability to utilize a partially used page of labels. It also has no trouble printing 5 lines on all 33 labels; your review did not say whether the other labeling software had this capability.

Lawrence Stevens' statement that "HyperCard-based addressers . . . don't really have an advantage over DAs . . ." is remarkable. Are there really DA labelers that can match the functionality and price of Lightning Labels for printing standard 33-to-a-sheet labels on a LaserWriter?

Bruce Long
Tempe, Arizona

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Video Overlay Software

In the recent article entitled "Mac TV Tools," by Lon Poole September 1989], Poole mentions that some hardware manufacturers do not provide software that uses the video overlay features of their cards. I am pleased to report that Truevision is now shipping and updating all customers with new software that offers straightforward keyboard or menu control of video overlay in 8-, 16-, and 32-bit modes for NTSC and PAL scan rates.

Additionally, Truevision has lowered the list price of its NuVista videographics boards for the Macintosh II, IIx, and IIcx as follows: NuVista 1M $2995; NuVista 2M $4495; and NuVista 4M $6495.

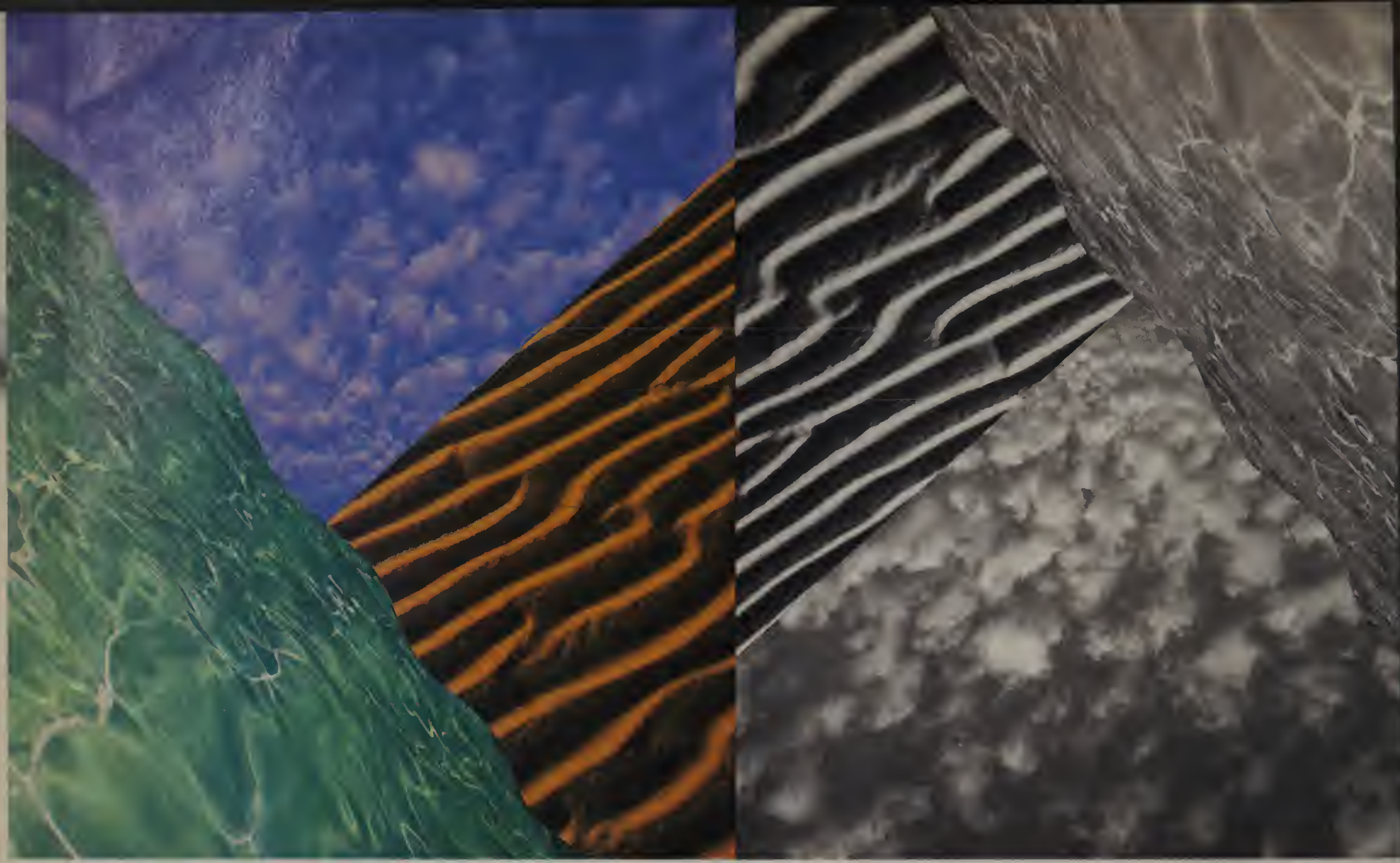
Steve G. Kukla
Market Development Manager
Truevision

MacDraw II's Hidden Commands

In response to "Draw, Pardner" (August 1989), I would like to clarify a point made by Steve McKinstry, as he critiqued one of my favorite programs, MacDraw II.

He states that MacDraw II lacks ⌘-key equivalents such as Ungroup, when in fact, it uses a variety of such com-

(continues)



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mands that are not necessarily listed in the menus (activated by using a Shift-⌘ sequence). For example, to group objects you would select them and press ⌘-G. To ungroup items, press Shift-⌘-G. To unlock items, press Shift-⌘-H; to access the Save As command, press Shift-⌘-S. There are many other combinations that control such features as Alignment, Move To Back/Front, and Unsmooth. Users who are not aware of MacDraw's Shift-⌘ feature are missing out on a great benefit.
Douglas M. Pawloski
Grosse Pointe, Michigan

Calculating Thoughts

Regarding Allan Bonadio's letter ["Reinventing Mathematics"] in the September 1989 issue in which he accuses Wolfram of claiming undue credit for developing computer algebra, says he knows Apple's reason for not incorporating Mathematica into the ROM, and claims that Wolfram wants to milk the users of Mathematica:

Eight codevelopers of Mathematica are listed along with Wolfram, and a large number of software systems are cited.

It doesn't make any sense to place Mathematica in the ROM. As for the decision not to bundle the program with Macs, neither I nor Bonadio is privy to the considerations that take place within Apple. However, his assertion that Wolfram's motivation for seeking this arrangement is to be able to "milk the users for all the cash they have" is simply defamatory.

Even in the absence of bundling arrangements, I expect Mathematica will become a standard throughout the computing community. That's because a well-designed and well-implemented symbolic manipulation program that is also a general mathematical programming language and that works on many different computer systems, offers the greatest potential for further development both by its authors and its users. This will indeed provide a service to our large community of scientists, mathematicians, and engineers, since it will free us from the tedium of calculating, and we—as well as Bonadio—will undoubtedly benefit from having additional time for thought.
Richard J. Gaylord
University of Illinois
Urbana, Illinois

What's Your M.O.?

The feature "Hard Disk Alternatives," by Charles Seiter [July 1989], while a very positive article that adds to the visibility of magneto-optical rewritable drives in the mass storage market, contains some erroneous information. Seiter states that the current M.O. drive manufacturers are Maxtor, Sony, and Ricoh, and that M.O. media were invented by 3M and are available exclusively through Sony. Actually, only Maxtor and Sony manufacture M.O. drives, and M.O. technology was jointly developed by KDD and Sony, both of Japan. Sony worked with 3M to make 3M media compatible with Sony's M.O. drive.
Akyra Pagoulatos
Sony Corporation
Tokyo, Japan

The Misspelled Word

I just received the September issue of *Macworld* and immediately noticed the first ad



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"For heavy users of the English language" extolling the virtues of Microsoft Word 4.0. Apparently spelling is not a major concern for those heavy users at Microsoft. Word's spelling checker obviously missed an error in the chapter title of one of the examples, namely, "Chapter 4—Steller Opacity." Perhaps human proofreading still has some merit.
David Szymkowski
University Park, Pennsylvania

Global Trespass Becomes Moriarty's Revenge

Since your review of Global Trespass [*Reviews*, November 1989], the game has been significantly enhanced and has been renamed Moriarty's Revenge. It's a detective game in which players must track a suspect around the world using clues they uncover in each city. It now features digital sound effects and a computerized detective's notebook.

Moriarty's Revenge is published by Bull City Software and retails for $59.95.
Robert S. Capon
HJC Software
Durham, North Carolina

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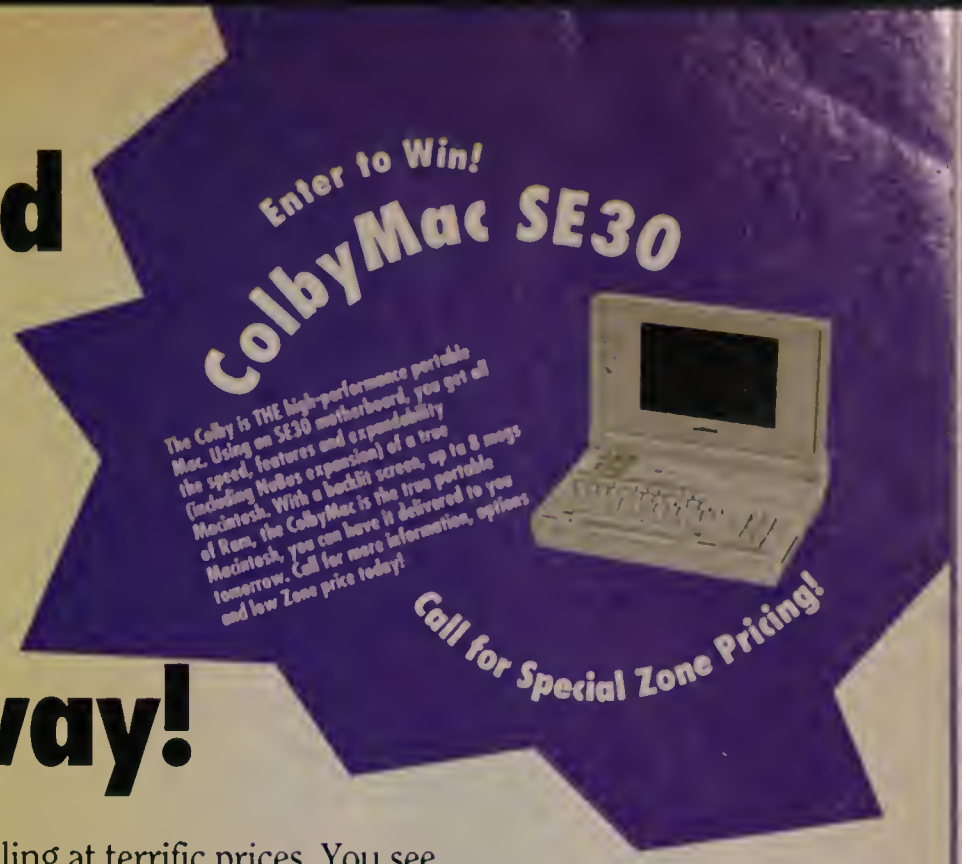
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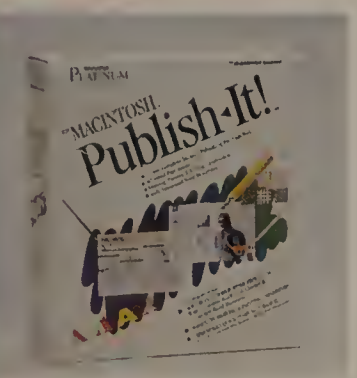
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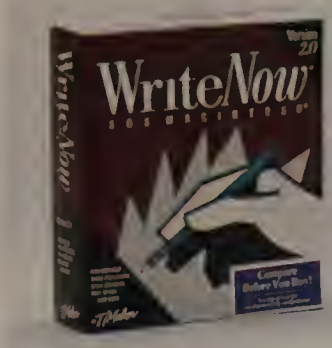
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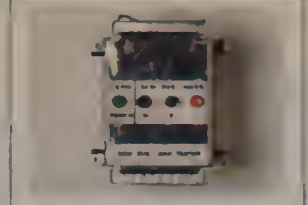
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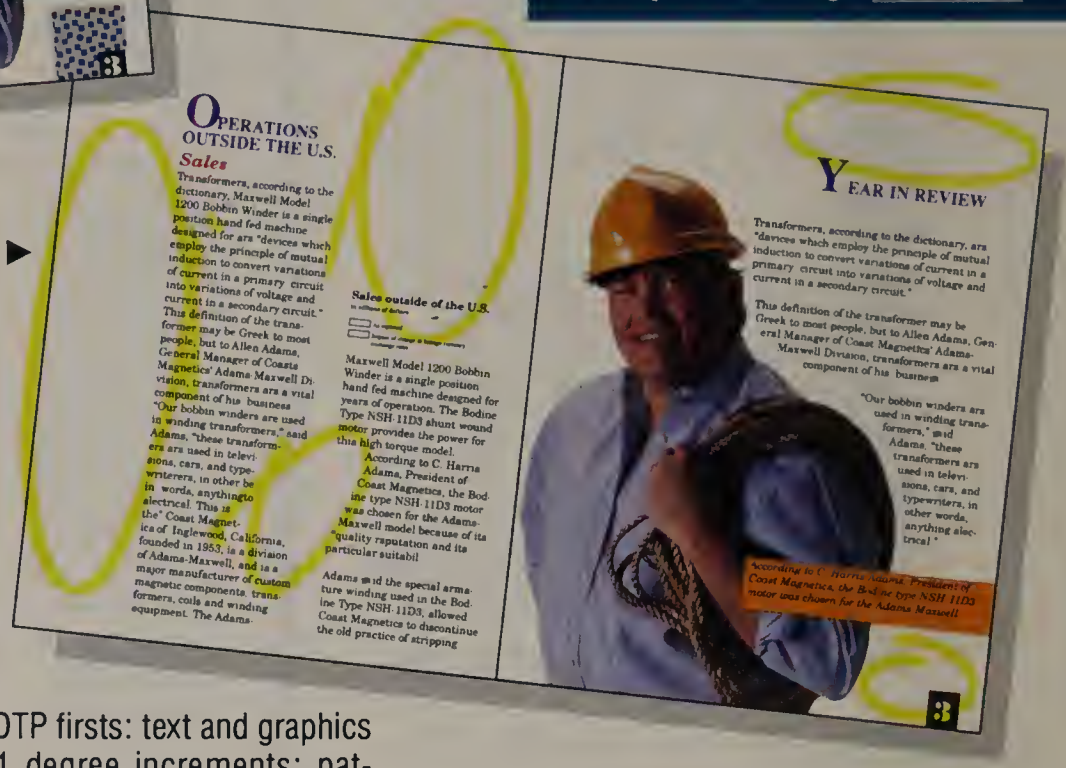
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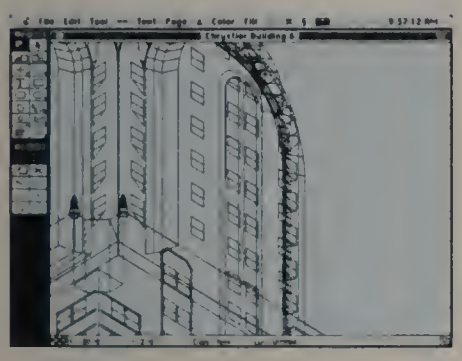
by Deborah Branscum

This column examines the tools and the talent behind Macworld's graphics



Artists: Ken Bringhurst, president of Strata, teamed up with Jim Gray, a graphic artist for Graphsoft, to create a tribute to New York's Chrysler Building for our feature on architects using the Mac.

Tools: Bringhurst used his company's StrataVision 3d 1.01, a rendering and modeling program, running on a Mac IIx with a RasterOps Frame Grabber video board, a Jasmine 140MB hard disk, a Radius 24-bit color board, a Radius Two Page Display, and a Panasonic Super VHS 400-line resolution camcorder. Gray used Graphsoft's MiniCad+ 2.0 and a Mac II with 5MB of memory.



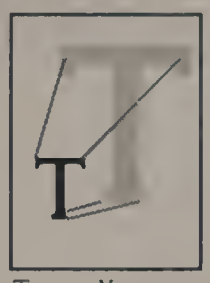
How It Was Done: Our reproduction of the Chrysler Building was created in two parts. First, artist Jim Gray created a 3-D wire model within the MiniCad+ CAD package. Then Ken Bringhurst completed the illustration by rendering it within StrataVision 3d. Gray kicked off the proceedings with a trip to the library for photo research. The illustration is not based on a scanned image, however. "If you scanned in a photograph you could probably trace over it, but sooner or later you would have to turn it into a vector drawing, which can then be turned into a three-dimensional object," says Gray, explaining why he created a reproduction of the Chrysler Building by hand within MiniCad+. It took 12 hours to create, extrude, and model the different parts of the building, a detail of which is shown here.

MiniCad+ allows you to take any part of a drawing, give it a class identification, and then make it invisible. "So I turned off everything except what I was working on," says Gray. Windows were identified as one class, each side of the building as another class, for example. Making established elements

(continues)

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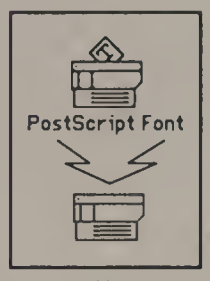
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invisible helped speed up redraws as he created new elements, and it eliminated screen clutter.

Gray did a test rendering within MiniCad+ to make sure the 3-D wire frame was fine before turning over the 1.5MB file to Bringhurst for his portion of the work.

Bringhurst imported the MiniCad+ file directly into StrataVision. To render the image he created attributes, applied them, then set the scene. An attribute describes the factors that can be defined and applied to a surface. A single attribute can include color, called a color map; texture, called a bump map; transparency levels; and more. Wrapping wood or marble texture around a 3-D object is one example of applying an attribute. Bringhurst says an attribute is "a lot like a font"; once created, you can use it in many different ways.

To render the Chrysler Building, Bringhurst selected a surface, created an attribute for it, then applied the attribute to the surface. The attribute for the surface containing triangular windows includes a gray color map, done in PixelPaint Professional, and a bump map for texture. "Normally you'd have to do that by using polygon objects, which creates a much larger file," says Bringhurst. "I made a bump map of radiating lines and horizontal lines. Where the bump map is light, the surface of the image appears raised; where it's dark, it appears to be depressed."

Bringhurst gave the protruding main arch a granite attribute for an interesting, varied surface. He says he used a Panasonic Super VHS format video camera to capture a headstone "because it was the best example of granite I could find." The Panasonic's 400-line resolution isn't lost by the RasterOps Frame Grabber board, which can accept either 200- or 400-line resolution.

The illustration was created quickly to meet production deadlines. "I didn't have time to use ray tracing to achieve a reflected look in the windows, so I used digitized clouds as an attribute and simply mapped it to windows," says Bringhurst. "Viewers then make the assumption that it's a reflection."

Once Bringhurst completed mapping attributes to surfaces, it was time to set the scene. With StrataVision 3d, "you can set where your viewpoint is, then adjust focal length, position, and orientation, as well as the magnification of the image." Lighting is also a part of setting the scene, but nothing fancy was used, according to Bringhurst. StrataVision has spot light and point light sources (light bulbs). Any of these light sources can be used as a projection source, says Bringhurst. In this case a directional global light source was used, representing sunlight. Bringhurst simply turned on the global lighting overlay and then adjusted the direction of the light source.

"The file ended up being huge because of resolution concerns," says Bringhurst. "The image was antialiased. It's by far the largest image I have ever made. For an image that size, a 2.5MB file would probably be sufficient."

Bringhurst's portion of the project commanded seven hours. The large image "makes a big time difference." ◘



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Ashton-Tate Stumbles

Full wrong in the Macintosh market

by Steven Levy

In the world of microcomputer software, there is an acknowledged triumvirate: the Big Three of Microsoft, Lotus, and Ashton-Tate. All have made fortunes in the world of MS-DOS. But in the realm of Macintosh, there is only the Big One—Microsoft. So it was exciting news when Ashton-Tate decided to bite the Big One and compete, full throttle, in the Mac market.

Cynics said that a company so wired into the cretinous DOS mentality couldn't compete in the innovative Mac world. The first test would be the Mac counterpart to its major product, dBase III. After a six-month vaporware period, Ashton-Tate finally produced dBase Mac. The program hit the marketplace with a sour note not heard since Lotus Jazz went flat. Cynics 1, Ashton-Tate 0.

But then the company quite reasonably attempted a different tack: acquisition. If it couldn't earn respect in the Mac market, Ashton-Tate would buy it. Making use of its mighty resources as one of software's Big Three, it made two terrific purchases.

The first consisted of the people and products of Ann Arbor Software, a small Mac publisher that apparently had gotten in over its head with the development of a groundbreaking word processing product called FullWrite Professional. The auteur of this creation was a Mac wizard named Scott Weiner. The second purchase was a graphically sophisticated spreadsheet that would be called Full Impact Professional. Ashton-Tate also hired its creator, Randy Wigginton, a Mac pioneer who had written the first MacWrite.



It was a bold initiative, and I picked up a feeling of optimism and energy when I visited the San Jose, California, headquarters of Ashton-Tate's Macintosh division in October of 1988. Recently hired to head the division was a bright young man named Terry Garnett, formerly head of a software company that sold a product called Lightyear, a "decision processor" that would have been wonderful—it gave great demo—except for the fact that it seemed virtually useless.

TWO THOROUGHBREDS, ONE DOG

This criticism could not be leveled at Ashton-Tate's Macintosh offerings. Even the only certified dog among them, dBase Mac, could perform productive tasks—its problem was that it wasn't really compatible with the millions of templates written in Ashton-Tate's MS-DOS product, and it seemed to be the slowest product in the Western world. (Significantly, a competing product, FoxBase, had neither problem, showing that outsiders understood Ashton-Tate's business better than Ashton-Tate did. Ashton-Tate, apparently an adherent of the "if you can't beat 'em, sue 'em" school of competitive strategies, has accused Fox of copyright infringement and has taken the matter to court.)

It looked as if Guy Kawasaki was right. As an Apple evangelist, Kawasaki had had problems dealing with Ashton-Tate; now heading his own database company, he pithily sums up his views in his recent book, *The Macintosh Way*.

> Ashton-Tate's behavior towards ... Macintosh ... reminded me of bald men who take their last wisps of hair and comb them unnaturally across their scalps to cover their heads. In the process they only bring more attention to their baldness. Ashton-Tate's baldness was a lack of allegiance to the Macintosh, lack of knowledge about what was going on in their own company, and lack of understanding of Macintosh database needs. Ashton-Tate didn't drink from the Macintosh well; it gargled.

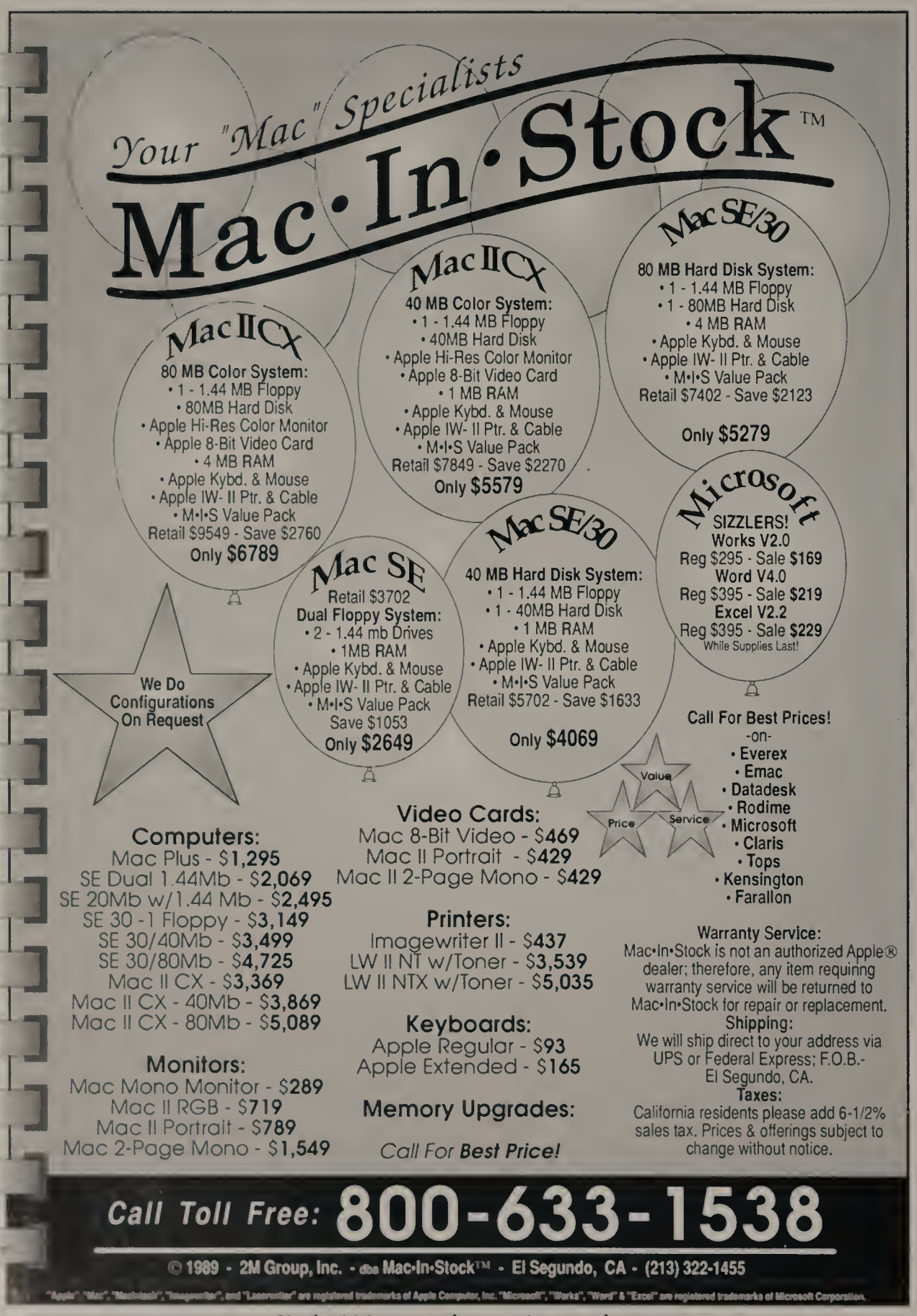
But wait: Ashton-Tate's other two major products, FullWrite and Full Impact, were state-of-the-art Macintosh products, created by people whose blood, when observed under a microscope, flowed in icons. Both programs not only operated in the Macintosh spirit but expanded their respective genres by integrating the graphic mindset more fully into the application. So what if Ashton-Tate was too pa-

(continues)

thetically fixated on covering its head with the wispy tufts of its MS-DOS, character-generated heritage? It had gone out and bought the real thing. The question was, could the company work the Mac market well enough to sell the things? And the answer, at least in 1988, seemed to be why not? After all, Ashton-Tate was one of the Big Three!

Chairman Ed Esber was speaking specifically of Full Impact when he said, "We think we'll be a strong number two and we have a strong chance to eventually be number one." But his comment might have stood for Ashton-Tate's hopes for the Mac market in general. The company was gunning for Microsoft's lofty, lucrative perch in Macintosh software, no doubt about that. Gargle, gargle, gargle.

And gulp. Despite its superior products and its two brilliant architects, Weiner and Wigginton, the Macintosh division of Ashton-Tate has negotiated the shoals of the marketplace with seaworthiness more reminiscent of the *Exxon Valdez* than the good ship *Intrepid*. According to InfoCorp analyst Bill Higgs, none of Ashton-Tate's products have sold as many as 20,000 units; he guesses that half that amount would be more accurate. Another source says sales in the summer leveled off to fewer than 200 units per program. FullWrite and Full Impact, after promising starts, have disappointing positions behind their prime competitors. DBase Mac is stuck in the middle of the database pack, in general a weak category in the Macintosh world. So it probably was no surprise that just before August's Macworld Expo, the company announced that there would no longer be a Macintosh division. Instead, Mac products would be integrated into a PC Applications group headed by one Bill Lyons, formerly a software executive for IBM. Terry Garnett was no longer on the payroll, having left to pursue those ubiquitous other opportunities:



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Was this the disaster it seemed? Terry Garnett doesn't think so. He emphatically defends his former employer, as well as his own performance. "I feel very good about what was accomplished," he told me, noting that $40 million software companies are not created in a year. (I could have said, "What about Claris?"—but I shut up.) "Everyone's expectation was very high," he says, presumably to explain why most people think Ashton-Tate's performance was subpar.

When I sat down with Bill Lyons and Scott Weiner during the Expo to hear the official story, I got much the same message: things weren't so bad. They emphasized that folding the Macintosh division into a larger applications group did not represent a retreat from the Mac, simply a more efficient way to continue Mac development while simultaneously porting the better Mac applications to versions that would work in the MS-DOS world. This so-called cross-platform strategy would decrease the bureaucracy at the company, a bureaucracy that was potentially retarding development of the new, faster, even

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more featureful versions of Ashton-Tate software. As to the lackluster sales performance, Lyons and Weiner repeated the "Rome wasn't built in a day" defense, along with a reprise of the concept that the company was a victim of "too-high expectation," in Lyons's words. Anyway, they said, things were bound to get better now that the company had recently hired, for the first time, a sales force devoted solely to pushing the Macintosh products. The interview finished in a flourish of rah-rah, with Lyons promising that "we will be a competitive player in the Mac market." Weiner, apparently a student of professional wrestling, concluded by saying, "I want to kick some butt—it's become personal."

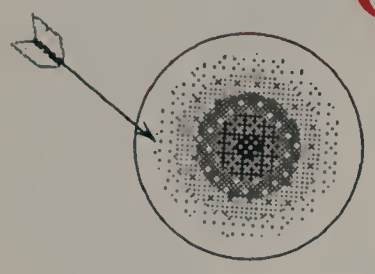
Neither speaker directly addressed the real reason for Ashton-Tate's miserable performance: as Guy Kawasaki realized two years ago, the company *doesn't get* the Macintosh. People whose job it is to watch the computer industry haven't been fooled. "Ashton-Tate didn't understand the essence of the Mac—their heart wasn't in it," says Esther Dyson. Stewart Alsop concurs. "It's not the products' fault—you never really got the sense that the company was committed to the Mac," he says. While Ashton-Tate was smart enough to buy good Mac products in the wake of the dBase Mac fiasco—sort of a "management by miscegenation," says Dyson—the company had no idea how to woo Macintosh users once the products came out.

FullWrite, for instance, garnered more attention when Ann Arbor Software was setting vaporware records than when Ashton-Tate finally released the product. At Macworld Expo in August 1988, people were approaching Ashton-Tate employees and asking when the product—shipped three months earlier—would finally be released. And compare the low-key recognition of Full Impact—probably the most underrated program in the Macintosh pantheon—with the splashy publicity Informix generated for its Wingz spreadsheet. Even though the Wingz hype became something of an industry joke, the campaign guaranteed that people would look at the product when it finally shipped—and now Wingz is outselling Full Impact.

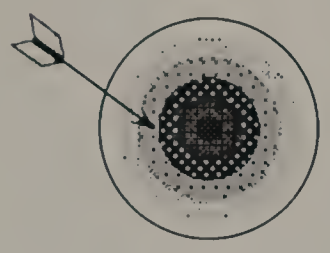
One knowledgeable observer expressed it succinctly: "Ashton-Tate wandered into the Mac market but didn't know how to do it." As a DOS company, it was ignorant about the Mac, but conventional wisdom dictated that Ashton-Tate diversify. Apple urged the company to do a unique Mac product, and management, possibly because it never took the Mac seriously, went ahead and did dBase Mac, a flashy product without the substance routinely provided to DOS customers. Predictably, everybody complained that the product wasn't compatible with dBase III. Then, after finally getting some good products and the good Mac people who created them, Ashton-Tate hired Garnett, who wasn't part of the Mac culture and who never got admitted to that elite. Meanwhile, according to insiders, the company failed to hire marketing and

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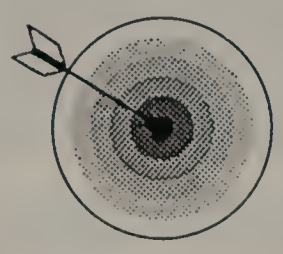
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sales people who really knew the Mac marketplace and community. Overall, the history of Ashton-Tate in the Mac market is one of incompetence. The Mac never rivaled DOS in the heart of management.

NOW, FOR THE REAL TROUBLES

Of course, there is a very good reason for Ashton-Tate's continued fixation on MS-DOS products. Those products, primarily dBase II and III, are the overwhelming reason for Ashton-Tate's Big Three status. Therefore, the failure of the Mac products to get off to a fast start is a relative footnote in the larger corporate docket. The main stage in the Ashton-Tate drama is located at the corporate headquarters in Torrance, near Los Angeles—not at the Northern California offices where the Mac forces bivouac.

And it is there that Ashton-Tate has run into troubles that make its Mac problems seem like a slight headache by comparison. Last year the company belatedly introduced dBase IV, the new version of its cash-cow MS-DOS product. To say the least, the marketplace is not responding as planned. "They screwed it up," says industry analyst Jeffrey Tarter of the program. Customers, no dummies, aren't buying in vast volume. "DBase IV isn't a success," says analyst Adam Green. As a result, the entire operation may be in danger.

A week after Macworld Expo, news of a $20 million loss in the second quarter shrouded the company like a vile cloud of toxins wafting from Bhopal. The stock price, which was at $23 in February, was now below $13. Ed Esber announced that some 15 percent of the work force would be axed. Some analysts standing over the weakened company have begun a grim countdown. "Their future is in question," says Stewart Alsop. Tarter believes the company will survive, but only on the force of its previous successes. "It takes a long time to kill a dinosaur," he says. "The brain may be dead but the tail will be around for a long time." Esther Dyson muses over the possibility that "their stock price will get cheaper and cheaper" until either some white knight comes around to buy the tattered remains, or the company sells some of its products to stave off the reaper. Presumably, the Mac products would be among the first to go.

Ashton-Tate's Mac guru Scott Weiner has heard those rumors, but he disregards them. He still thinks that the company can hang on and, in particular, turn things around on the Macintosh. He envisions a hybrid family of applications bonding in gleeful incest, hot-linking data with ease. He promises that the next wave of releases will not only be more powerful, but also lean and mean enough to maintain a screaming pace on a Macintosh Plus. He implies that he, Wigginton, and other creative whizzes are cooking up concepts that will push the envelope of computer applications. And Weiner observes that the excitement from the in-house Mac wizards is winning over the holdouts in the company who had previously spurned the graphical interface. The innovations in FullWrite and Full Impact will find their way to other platforms, inspiring a new generation of OS/2 and UNIX products. The Mac, he believes, might actually help revive Ashton-Tate.

But while the Macintosh software architects toil in San Jose, their employer struggles in Torrance to hold the company together. It's going to take money, expertise, and savvy for Ashton-Tate to approach its goal of being a great Mac company. You have to wonder whether a company that couldn't provide those qualities during its good times is going to deliver them now, when stock analysts from hell are banging on the door, demanding profitable quarters.

Bill Lyons, the Ashton-Tate applications czar with the IBM pedigree, assured me that, though it may not succeed in the next two years or so, Ashton-Tate has not abandoned its plans to unseat Microsoft as number one on the Mac. I don't know anything about Bill Gates's sleeping habits, but if anything does keep him awake these nights, it sure isn't Ashton-Tate. Unless he's bothered by the sound of a comb pulling thin wisps of hair across a bald pate. Ⓜ

Steven Levy is a Macworld *columnist. His most recent book,* The Unicorn's Secret: Murder in the Age of Aquarius, *will be released in paperback by NAL next month.*

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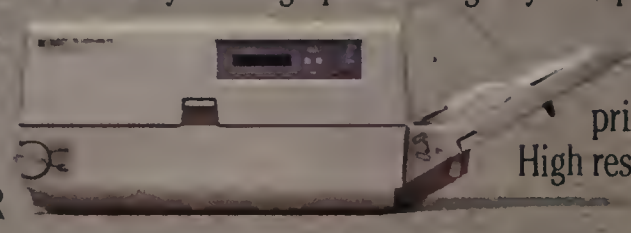
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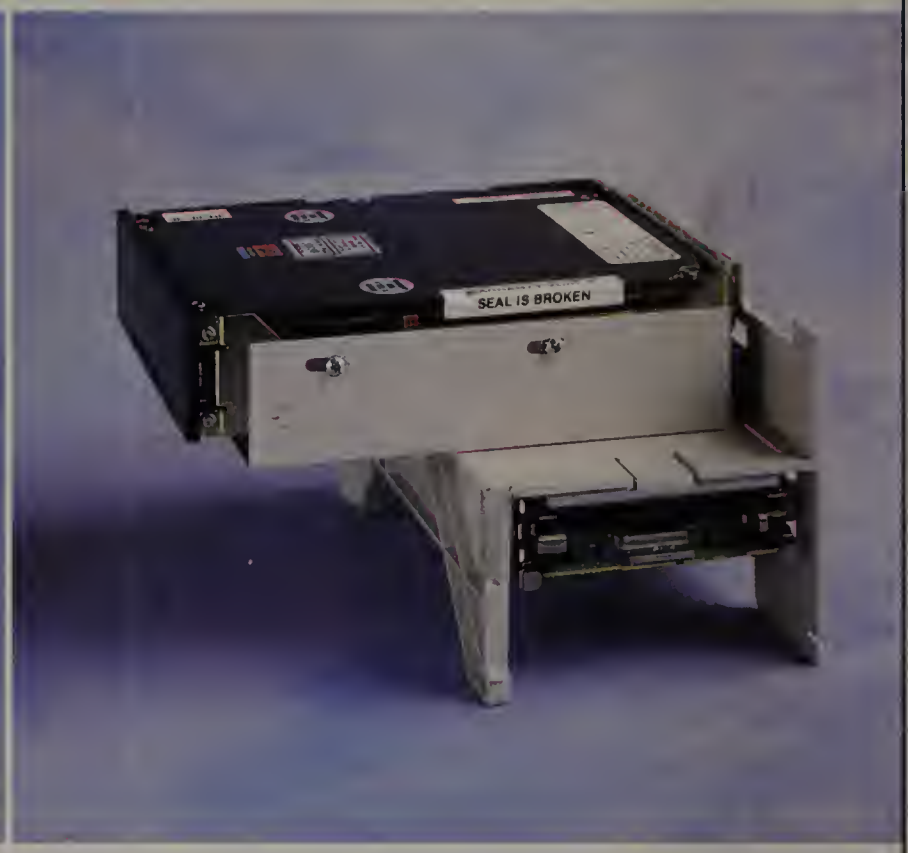
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Apple Plays Robber Baron

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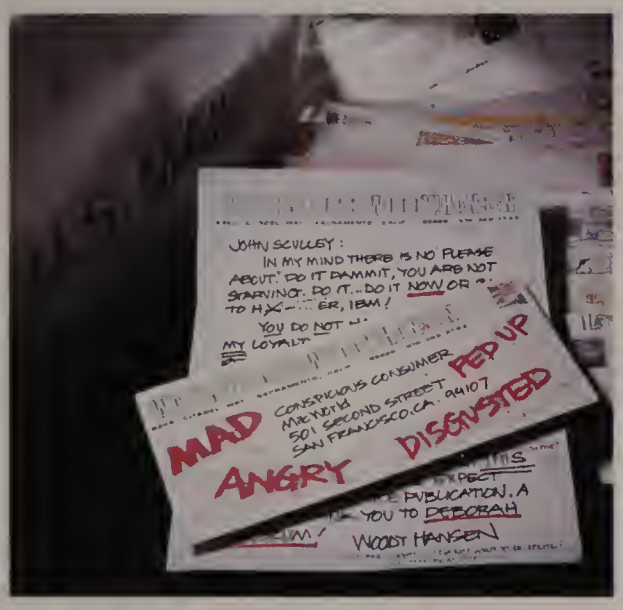
by Deborah Branscum

Apple is robbing you blind. Not literally, of course, although it may not feel much different from having your pocket picked. But Apple's ploy is perfectly legal. It refuses to pass along the one-year warranties it receives from hard disk suppliers, pocketing charges for replacement drives that Apple presumably receives for free.

It's disturbing that Apple fails to offer the industry-standard warranty of one year. But it's outrageous that the company won't pass along its suppliers' warranties to consumers.

Apple's approach is in stark contrast to that of most hardware companies. GCC Technologies, for example, receives a one-year warranty on the hard disks it buys from Seagate. Then GCC adds an additional 12 months of coverage, for a total two-year policy. Apple receives a one-year warranty on most, if not all, of its hard disks. Then it *lops off* several months and gives its buyers a 90-day guarantee.

Consider the case of Stan Urban, a Raytheon engineer who lives in Medway, Massachusetts. Urban's Apple 20SC hard disk failed 8 months after he purchased it. His dealer said repair would cost $400, and the hard disk would be exchanged for a rebuilt one.



LOUIS DELGADO

Thanks to the 1200 plus readers who responded to Apple's warranty policy. Apple's reply: "We appreciate the interest of Macworld readers in Apple's product warranty. Your concern in this matter is naturally our concern, and we are considering this issue carefully."

An unhappy Urban looked for an alternative, because he wanted to save the data on his disk. No slouch with tools, he popped the drive cover and discovered it was a Seagate unit. Several phone calls later, someone at Seagate's return facility told him the company would repair the drive for $185.

The plot thickened when a different dealer told Urban his disk was probably still covered under Seagate's warranty. More phone calls revealed that the drive *was* covered by a warranty. Seagate told Urban that the drive's code indicated that it was 50 weeks old at failure. By now, the drive was more than a year old, but the company agreed to repair it under warranty if Urban would send in a copy of his receipt.



So one man's story has a happy ending. Seagate abided by its manufacturer warranty, and Urban has a repaired drive. Unfortunately for the rest of us, Apple hard disk repairs don't look so rosy. Apple will not comment on its suppliers. But according to one source in the OEM (original equipment manufacturer) business, manufacturers are bound by contract not to accept any device for service that they sold to Apple. The practical implications are short and sweet, at least for Apple. With the exception of Seagate, all the drive makers I spoke to said they will not repair an Apple-labeled disk. Unless there's an independent service center in your area, you must take Apple products to an authorized dealer for service.

The difference in price can be enormous. Urban's Apple dealer wanted to charge him more than twice the Seagate repair fee. By the way, Apple dealers aren't getting especially rich on repairs, at least in this case. Apple charges them $324 for a rebuilt disk like Urban's, whether or not it's under a supplier warranty.

Quantum gives Apple a one-year warranty on all its hard disks, according to Ray Miller, vice president of quality and reliability. "Apple uses the warranty they have negotiated with us," he said. According to one authorized dealer, 80 percent of the Macintosh hard disks he's seen are from Quantum. And Apple is Quantum's largest single customer, so it seems safe to assume that many Macintosh drives are covered by Quantum's one-year warranty. Other suppliers (Seagate, Miniscribe, and Imprimis) confirmed that Apple receives a one-year warranty on their drives as well. A Sony representative declined to comment on its agreement with Apple. (At least one vendor has negotiated a one-year warranty from Sony, which makes

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Apple-labeled floppy drives and color monitors for the Macintosh, so Apple certainly could get the same kind of warranty if it wanted to.)

Actually, negotiating warranty coverage from suppliers is not at all unusual. Jasmine, SuperMac, and Radius are among the companies that receive manufacturer warranties and pass them along in some form to consumers. Why doesn't Apple do the same? According to Mike Torgersen, manager of customer service, there are several reasons. Some components are made by Apple, not suppliers. And the warranties from suppliers vary, he says. "It's usually our practice to negotiate the warranties out of the various relationships with suppliers. And it doesn't always happen, but we'd prefer to get the products without a warranty on them [and get them] at a lower price."

Perhaps. But several suppliers already give Apple a one-year warranty. And Apple certainly has the clout to negotiate consistent warranties across subsystems, such as hard disks and monitors. So the company could offer a decent warranty on subsystems alone. Apparently Apple is unwilling to offer different warranties on different components. "We want to present ourselves as a company that is marketing a product with consistent policies that we pass on to the customers," says Torgersen. "Right now that policy is a 90-day warranty."

It's outrageous that Apple won't pass along its suppliers' warranties to consumers

That fact alone is turning some users away from Apple-labeled drives and peripherals to third-party companies.

"I am so glad I didn't pay Apple for my CMS 60MB hard disk," writes Richard M. Citron of Culver City, California. "If I had, I would have had to pay Apple when it crashed after 90 days, rather than have CMS fix it for free because it was within their one-year warranty. Conversely, when the internal CMS 20MB hard disk in our Macintosh SE crashed at work after 90 days, my company had to spring for a new

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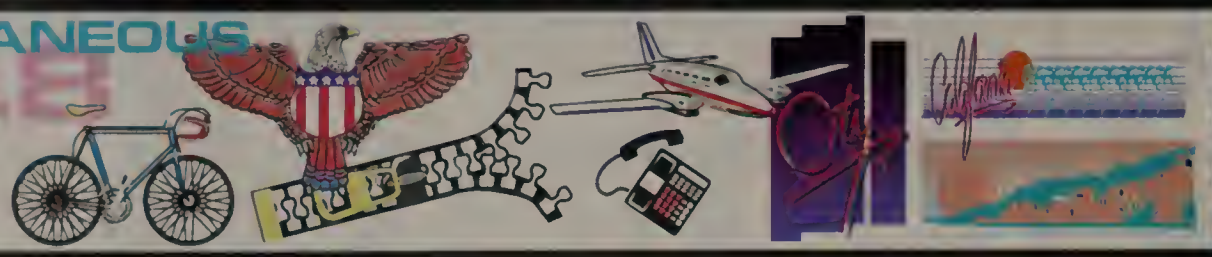
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DIGIT-ART

DISKS

Digit-Art MAC by Image Club is vector based PostScript clip art that can be used with any popular Macintosh applications such as PageMaker, ReadySetGo, X-Press, CricketDraw, FreeHand, and Illustrator. You can maximize printing detail with any PostScript laser printer including a Linotronic for typesetting sharpness. Image Club Digit-Art is easy to customize or add color to for separations when used with Adobe Illustrator or Aldus FreeHand. Unlike jaggy edged, 300 dpi scanned bit-map clip art (edited only with paint programs), Digit-Art is PostScript (EPS). You will experience scaling and editing flexibility without any loss of image quality. Your Image Club art is expertly rendered by our staff of in-house artists and is equivilent to the very best in line art when reproduced on a PostScript printer. Digit-Art is available on the ArtRoom CD-ROM and in diskette packages as featured above.

Digit-Art PC for PostScript printers is compatable with PageMaker, Ventura or any other program that will accept EPS format graphics. There is even a version of Digit-Art that will print on non-PostScript printers such as the HP LasarJet (PC TIFF). Digit-Art PC is available on the ArtRoom PC CD-ROM or in diskette packages.

Also on disk - the Image Club Typeface Library - 600 licensed PostScript typefaces for Mac or PC. Call for a catalog.

Digit-Art Volume	1	2	1&2	1,2&8	3	4	5	4&5	6	3&6	7	8	9	10	9&10	13	14	15
# 800K Disks	3	4	7	10	5	3	3	6	3	8	5	3	5	2	7	5	5	5
Mac EPS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mac PICT	•	•	•	•								•						
PC EPS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PC TIFF	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Price	$99	$99	$168	$199	$149	$99	$99	$168	$99	$199	$99	$99	$149	$99	$199	$99	$99	$99

This advertisement and all art was created with Image Club clip art and typefaces using a Mac II, PageMaker 3.0.1, Illustrator 88 and FreeHand 2.0. Color separations were output as negatives on a Linotronic.

CD-ROM

ARTROOM

The ArtRoom™ CD-ROM contains over 120 MB of Image Club EPS clipart and PostScript fonts. A vast collection of 1200 images and 100 typefaces - our entire library - on one convenient disk.

ArtRoom™ 3.0 CD-ROM: $999
ArtRoom™ 3.0 CD-ROM with NEC CD-ROM drive: $1599
ArtRoom™ 1.0 PC CD-ROM: $699
(does not include fonts)

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This Ad isn't Big Enough!

ABSS™ (VGC)
Aase Light
Aase Light Italic
Aase
Aase Italic

Ad Lib
Ad Lib

AKENATON™ (VGC)
AKENATON

AKI LINES™ (IC)
AKI LINES

ALBERTUS® (MONOTYPE)
ALBERTUS Titling
ALBERTUS Bold Titling
ALBERTUS Black

ALLEGRO
Allegro

AMELIA™ (VGC)
Amelia

AMERICA (IC)
America
America Italic
America Bold

ITC AMERICAN TYPEWRITER®
American Typewriter Light
American Typewriter Medium
American Type Bold
American Type Outline

AMERICAN UNCIAL
American Uncial & Initials
American Uncial & Init. Bold
American Uncial & Init. Open

ANDRICH MINERVA™ (VGC)
Andrich Minerva
Andrich Minerva Italic

ANTIKVA MARGARET™ (VGC)
Antikva Margaret
Antikva Margaret Italic

AQUARIUS™ (VGC)
Aquarius 5
Aquarius 6
Aquarius 10
Aquarius Outline

ARQUITECTURA™ (IC)
Arquitectura

ARROW™ (VGC)
Arrow

AUGUSTEA
AUGUSTEA
AUGUSTEA Inline

ITC AVANT GARDE GOTHIC®
Avant Garde Gothic Light
Avant Garde Gothic Light Dbl
Avant Garde Gothic Book
Avant Garde Gothic Dbljque

Avant Garde Gothic Demi
Avant Garde Gothic Oblique

ITC BOOKMAN®
Bookman Light W/Swash
Bookman Light Italic W/Swash
Bookman Demi W/Swash
Bookman Demi Italic W/Swash
Bookman Bold W/Swash
Bookman Bold Ital W/Swash
Bookman Outline W/Swash
Bookman Contour W/Swash

BRASS PLATE™ (IC)
Brass Plate

BROADWAY™ (VGC)
Broadway
Broadway Engr

BRODY (ATF)
Brody

BRUSH SCRIPT (ATF)
Brush

ITC BUSORAMA®
Busorama Light
Busorama Medium
Busorama Bold

C MODERN (IC)
C Modern

CALDONIA (IC)
Caldonia
Caldonia Italic
Caldonia Bold
Caldonia Bold Italic

CAROLUS ROMAN
Carolus Roman

CARTOON
Cartoon Bold

CASINO™ (IC)
Casino
Casino Grey

CASLON ANTIQUE (ATF)
Caslon Antique
Caslon Antique Italic

ITC CASLON®
Caslon ND 224 Book
Caslon ND 224 Book Italic
Caslon ND 224 Bold
Caslon ND 224 Bold Ital

CASTLE (IC)
Castle
Castle Grey

ITC CENTURY®
Century Book
Century Book Italic
Century Bold
Century Bold Italic

CORVINUS SKYLINE
Corvinus Skyline

ITC CUSHING®
Cushing Book
Cushing Book Italic
Cushing Bold
Cushing Bold Italic

DAILY TRIBUNE (IC)
Daily Tribune

DAVIDA™ (VGC)
DAVIDA Bold

DELPHIN NO. 1
Delphin No. 1

ITC DIDI®
Didi

Egyptian
Egyptian 505 Outline

ITC ELAN®
Elan Book
Élan Book Italic
Élan Bold
Élan Bold Italic
Élan Black
Élan Black Italic

ELEKTRIK™ (VGC)
ELEKTRIK

ITC ERAS®
Eras Light
Eras Book
Eras Medium
Eras Demi
Eras Bold
Eras Ultra
Eras Outline
Eras Contour

ITC ESPRIT™
Esprit Book
Esprit Book Italic
Esprit Bold
Esprit Bold Italic

ESTRO (ATF)
Estro

EUROSTIL (IC)
Eurostil

Eurostil

Garamond Bold
Garamond Bold Italic

ITC GARAMOND®
Garamond Book Cond Italic
Garamond Bold
Garamond Bold Cond Italic

GILL SANS® (MONOTYPE)
Gill Sans Light
Gill Sans Light Italic
Gill Sans
Gill Sans Italic
Gill Sans Bold
Gill Sans Bold Italic
Gill Sans Ultra Bold

GILLIES GOTHIC® (FTN)
Gillies Gothic Light
Gillies Gothic Bold

GLOBAL™ (VGC)
Global

GLYPHIC SERIES™ (VGC)
Glyphic Series
Glyphic Series Italic
Glyphic Series Outline
Glyphic Series Out-Line Italic

GOLD RUSH (ATF)
GOLDRUSH

ITC GORILLA®
Gorilla

GOUDY OLDSTYLE (ATF)
Goudy Old Style
Goudy Old Style Italic

Jamil

Kabel Medium

Kaufman Script

Korinna Bold
Korinna Kursiv Bold
Korinna Outline

ITC LEAWOOD®
Leawood Book
Leawood Book Italic
Leawood Bold
Leawood Bold Italic

LIBERTY™ (IC)
Liberty
Liberty Outline

LICENSE PLATE™ (IC)
License Plate

ITC LSC CONDENSED®
LSC Condensed
LSC Condensed Italic

ITC LSC MANHATTAN™
LSC Manhattan

ITC LUBALIN GRAPH®
Lubalin Graph Extra Light
Lubalin Graph Extra Light Oblique
Lubalin Graph Book
Lubalin Graph Book Oblique
Lubalin Graph Medium
Lubalin Graph Medium Oblique
Lubalin Graph Demi
Lubalin Graph Demi Oblique

Lubalin Graph Bold
Lubalin Graph Bold Oblique

NEW BASKERVILLE®
New Baskerville
New Baskerville Italic
New Baskerville
New Baskerville Italic

NEW YORKER (IC)
New Yorker
New Yorker Engraved

NEWS GOTHIC (ATF)
News Gothic
News Gothic Bold

ITC NEWTEXT®
Newtext Regular
Newtext Book Italic

Novarese Bold
Novarese Bold Italic

OLIVE ANTIQUE
Olive Antique
Olive Antique Italic
Olive Antique Bold
Olive Antique Black
Olive Antique Narrow
Olive Antique Black Ext
Olive Antique Black Ext Italic

OMNI (IC)
Omni
Omni Italic
Omni Bold
Omni Bold Italic
Omni Black

ORGANDA™ (VGC)
ORGANDA
ORGANDA Bold

PT BARNUM (ATF)
P. T. Barnum

ITC PACELLA®
Pacella Book
Pacella Book Italic
Pacella Bold
Pacella Bold Italic

PAINTBRUSH™ (IC)
PAINTBRUSH

PARTY™ (VGC)
PARTY Grey

PICASSO™ (IC)
PICASSO

SIGNATURE (IC)
Signature

ITC SLIMBACH™
Slimbach Book
Slimbach Book Italic
Slimbach Bold
Slimbach Bold Italic

SOL™ (VGC)
Sol Thin
Sol Heavy

ITC SOUVENIR®
Souvenir
Souvenir Italic
Souvenir Demi
Souvenir Demi Italic

STAMP
STAMP Grey

STEELPLATE

STENCIL

STERLING (IC)
Sterling

ITC STONE INFORMAL
Stone Inf. Medium
Stone Inf. Medium Italic
Stone Inf. Semi Bold
Stone Inf. Semi Bold Italic
Stone Inf. Bold
Stone Inf. Bold Italic

ITC STONE SANS™
Stone Sans Medium
Stone Sans Medium Italic
Stone Sans Semi Bold
Stone Sans Semi Bold Italic
Stone Sans Bold
Stone Sans Bold Italic

ITC STONE SERIF™
Stone Serif Medium
Stone Serif Medium Italic
Stone Serif Semi Bold
Stone Serif Semi Bold Italic
Stone Serif Bold
Stone Serif Bold Ital

ITC STYMIE MANHATTAN®
Stymie Hairline

SURF STYLE (IC)
Surf Style
Surf Style Bold

ITC SYMBOL®
Symbol Book
Symbol Book Italic
Symbol Bold
Symbol Bold Italic

ITC TIA GRACIOUS™ (IC)
Tia Gracious Sans
Tia Gracious Serif

UNIFORM (IC)
Uniform 45
Uniform 46
Uniform 55
Uniform 56
Uniform 65
Uniform 66
Uniform 75
Uniform 76

ITC UPRIGHT®
Upright Regular

ITC USHERWOOD®
Usherwood Book
Usherwood Book Italic
Usherwood Bold
Usherwood Bold Italic

ITC VELJOVIC®
Veljovic Book
Veljovic Book Italic
Veljovic Bold
Veljovic Bold Italic

VIVALDI™ (VGC)
Vivaldi

ITC WEIDEMANN®
Weidemann Book
Weidemann Book Italic
Weidemann Bold
Weidemann Bold Italic

ITC ZAPF BOOK®
Zapf Light
Zapf Light Italic
Zapf Medium
Zapf Medium Italic
Zapf Demi
Zapf Demi Italic
Zapf Heavy
Zapf Heavy Italic

ITC ZAPF CHANCERY®
Zapf Chancery Medium W/Swash Alt
Zapf Chancery Medium Italic W/Regular Alt

ITC ZAPF INTERNATIONAL®
Zapf Int'l Light
Zapf Int'l Light Italic
Zapf Int'l Medium
Zapf Int'l Medium Italic
Zapf Int'l Demi
Zapf Int'l Demi Italic

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This ad was created on a Mac II using Aldus PageMaker 3.02, Adobe Illustrator 1.83, Silicon Beach Digital Darkroom, the text was set with the Futura & Futura Condensed families from the Image Club Typeface Library and output as negatives on a Linotronic L300 PostScript imagesetter

600 Typefaces

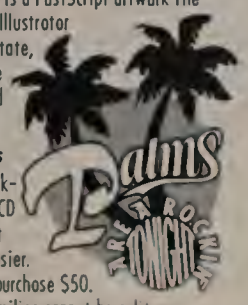
They just won't fit onto one page. This is the Image Club PostScript Typeface Library. 600 licensed "brand name" typefaces compatable with your Mac or PC and any PostScript printer. The typefaces are available on flappy diskettes in separate families as illustrated here or the entire library of 600 faces on our new Letterpress CD ROM (available for the Mac only).

Desktop Typestore

The Letterpress CD ROM features a special program developed by Image Club that unlocks typefaces as they are required on the CD ROM. The Letterpress CD can be obtained for as little as $199 including 10 fonts. Purchasing additional fonts from your Letterpress is as easy as making a phone call. We will provide a key number that is used to unlock the new typefaces from the disc.

PostScript Art Files

Also included with every font is a PostScript artwork file that you can use with Adobe Illustrator or Aldus FreeHand. Modify, rotate, stretch, customize and create your own headlines, logos and type based artwork.



Prices & Discounts

Whether you buy fonts on diskette or from the Letterpress CD ROM, our pricing and discount schedule will make it even easier.

Each font $25. Minimum purchase $50.

Please note that typeface families cannot be split up.

Discount schedule:

10-30 fonts 20% off	131-210 fonts 35% off
31-70 fonts 25% off	211-300 fonts 40% off
71-130 fonts 30% off	

Letterpress CD ROM

Letterpress CD ROM full disc (all 600 fonts)	$4999
Letterpress full disc with NEC CD ROM drive	$5599
Letterpress TypeVendor	$199

(includes 20 fonts with 600 more ready to unlock)

Ordering

To view the entire library of 600 fonts (a single page just can't do it), call for your free catalog or order with our toll free line. Image Club accepts VISA, MasterCard and American Express.

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Circle 361 on reader service card.

SERVICE HEROES

I recently purchased MacProof versian 3.2.2. When I tried to use it, my poor Mac wauld bomb every time," writes Alan Brandan af Westfard, Massachusetts. "So I called Lexpertise. Right away I was impressed because their custamer service had an 800 number. I was given prampt, caurteaus, and prafessianal help." Althaugh Lexpertise cauld nat uncaver a prablem, the campany sent Brandan a new capy af the program and patiently talked him thraugh anather installatian. "Naw MacProof is up and running an my Mac thanks ta the falks at Lexpertise, and at na additianal cast ta me."

Sun Remarketing gets kudas fram Kathy Margan af Tak, Alaska. Margan's mather ardered a used Lisa with a 20MB hard disk and saftware that emulated a Mac Plus. Margan carefully read thraugh the instructians far installing the hard disk, but it didn't wark. "A service man determined that the prablem was with the drive itself, nat my installatian; valunteered ta get a new drive en raute immediately; and requested that we return the malfunctianing drive when the replacement arrived. Again, delivery was very prampt, and this time the hard disk warked like a charm. We highly recammend Sun Remarketing for thase wha want a Mac but can't affard new equipment."

one, because we bought the CMS hard drive from Apple. If we had bought direct from a retailer, CMS would have fixed it for free. The really sad fact is that a number of hard drives in our SEs failed—all with the same consequences—Apple 1, Customer 0."

One source in the component business defends Apple's position. "Longer warranties don't come free," he says. "There's cost involved. As a large user of Macintoshes, I'm impressed by the reliability of the equipment. My problem as a user is that I have a lot of third-party equipment that is attached to my computers. A lot of smaller companies don't have the quality but use the warranty to attract customers." This insider says he would rather buy good products with short coverage than equipment with a two-year warranty that breaks down and is out several weeks for repairs.

"What Apple does well is test the incoming quality of what their vendors send them and then testing what comes out, the finished product," he continues. "Apple does a marvelous job at both ends of the scale. But that costs them something; it costs them a lot. I can't tell you how many [companies] aren't interested in quality but in price."

I would like to believe that Apple knows how to test, tests its products well, and produces quality products. But no matter how hard Apple tries, there will always be some failures. Many people had problems with power supplies in the original Mac and the Mac Plus. Apple's initial AppleFax Modem had incompatibilities that were corrected by new ROMs five months after the product was delivered. And, as I write this, Apple has announced a repair program for problematic Quantum 40MB and 80MB hard disks (see *Mac Bulletin* in this issue). This repair action follows an earlier program necessitated by Seagate disk failures.

It isn't scandalous that Apple sometimes produces lemons—every company has its share of flawed merchandise. But it is a scandal that Apple can actually profit from selling bad drives. Because if your drive dies after 90 days and is still covered by a manufacturer warranty, your Apple dealer will charge you several hundred dollars for a rebuilt drive. The bad drive will be sent to Apple, which can swap it for a replacement unit supplied by the manufacturer. Then Apple can sell the new drive back to a dealer.

Apple is a Fortune 500 company. Its net income for the third quarter of fiscal 1989 was $96.1 million. Extending the

(continues)

REMOVABLE. ERASABLE. OPTICAL. REMARKABLE!

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Pinnacle Micro delivered the first removable, erasable, optical storage systems for the Macintosh.

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Circle 287 on reader service card



Ramses II was not one to mince words. When it came to getting a point across, he was very direct — what was written was in fact etched in stone.

If he ruled today — in this exciting *Information Age* — he'd feel compelled to update his method to input and retrieve information. Being the meticulous type, Ramses would choose page recognition software that was accurate, fast and above all, flexible. Ramses would definitely choose *OmniPage*® to get the job done.

Let's face it, some scribes have less than perfect "*chipmanship.*" Ramses would require the most versatile page recognition software — one that could scan any font or font size, even multiple columns of text — no matter which scribe created it. There's nothing more frustrating than a misplaced hieroglyph. He'd definitely want it to support *MacWrite*™ and *Microsoft Word*,™ two of the most popular word processors within his kingdom. When it comes to page recognition software, he'd want the very best product at the best possible price.

He'd want *OmniPage*! And who would argue with the Pharaoh?

When you think about it — can you really blame him? There's just no substitute for a powerful, full-featured page recognition package. How can you afford to make a mistake when your entire "dynasty" depends on it?

So It Is Written...
So It Shall Be.

Means that *OmniPage* can read virtually any font, in sizes that range from 8 pt. to 72 pt.

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Multiple column feature means that complex, compound pages of text and graphics can be handled—automatically.

Transitional Editor™ lets you review scanned text before exporting it to a file. Cut, copy, paste, insert and delete text — or take advantage of the powerful search and replace tools which allow you to modify a page.



Reads and outputs underlines, bold faces and italics.

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The bottom line in page recognition software — eliminating excessive key strokes* for all time.

OmniPage 2.0 now available!



*Egyptian scribes had a real time of it when it came to excessive key strokes. Each letter, or hieroglyph, had to be individually etched into stone. And we complain today about writer's cramp?

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Circle 230 on reader service card

QUICK CHANGE ARTIST.

You need a gray scale scanner for your Mac. So you go to your ImageWriter.® Pop out the ribbon cartridge. Snap in ThunderScan.® Insert your artwork. And quicker than you can say Van Gogh, you're already going.

ThunderScan lets you import quality images into all painting, drawing and desktop publishing programs. Contrast and brightness are fully adjustable. And now ThunderScan 5.0 loads TIFF files and lets you display and edit grays on your Mac II.

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ThunderScan is compatible with the Macintosh 512K enhanced, Plus, SE and Mac II and all ImageWriter models except the LQ. Use on the Mac II requires our *Power Accessory for Macintosh II*
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Circle 176 on reader service card

warranty will not bankrupt the company, but it will make good on the claim, made in its 1988 annual report, that "the individual is at the center of everything we do." No amount of feel-good rhetoric and visionary videos can explain away a substandard warranty.

Apple, do the right thing. Change your policy.

In the meantime, owners of Apple-labeled Seagate hard drives have a choice. I spoke to a Seagate representative at the company's repair center in Delray Beach, Florida. "We take back anything that's out of warranty," she says. For a 20MB Seagate model 225 drive, the flat fee is $155 for a rebuilt drive. You get a 90-day warranty, and there's a turnaround time of two to four weeks, according to Armstrong. You can call the repair center at 800/669-5522. Better hurry, though—I have a feeling Apple may be discussing this matter with Seagate.

If your drive is less than a year old from date of manufacture, don't think you'll get lucky like Stan Urban. According to Julie Still of Seagate, Urban's drive was repaired by mistake, because Seagate is responsible only to Apple for repairs under its manufacturer warranty. Seagate can do repairs for users on out-of-warranty drives, but Still advised against it. "We will not refuse," she said, "but we strongly, strongly suggest that the user take advantage of the programs available through Apple."

Unlike Seagate, Mirror Technologies is actively competing with Apple in the repair business. The company claims a 10-day turnaround time and offers a 90-day warranty. Costs vary; call 612/633-2105 for more information.

LIBRARIANS, TAKE NOTE

The Apple Library Users Group has published a 102-page book devoted to articles on using Macintoshes in libraries. This terrific resource has 18 chapters covering such topics as "Enhancing Library Services with the Macintosh" and "Use of the Macintosh in the Reference Section." It has several case studies and an entertaining afterword of MacProverbs compiled by Rick Fensterer, a library media specialist at the Liverpool, New York, public library.

(continues)



Never underestimate the importance of a great backup system.

Just how risky is running a hard disk system without backup, anyway?

Would you believe almost a half-million dollars? Studies indicate that's how much it could cost to restore a typical 90 megabyte hard disk of business or engineering data. Of course, that doesn't include loss of income while you find another job.

You can avoid the sinking feeling that accompanies data loss by using MaxStream,™ the convenient, affordable Macintosh® tape backup system from Archive.

MaxStream's built-in error correction and data verification guarantees that even if your hard disk takes a dive, your data will have a soft landing.

A sizzling 6 megabyte-per-minute transfer rate leaves other tape systems in the dust. And easy-to-use backup and restore features include scripting for automatic, unattended operation, storing up to 150 megabytes–a network full of data–without intervention.

MaxStream's Universal Tape Format™ even lets you use cartridges to transfer data between your Macs and IBM PCs.® Call 1-800-237-4929, or write: Archive Corporation, Data Storage Division, 1650 Sunflower Ave., Costa Mesa, CA 92626 for the name of your nearest MaxStream dealer.

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Circle 3 on reader service card

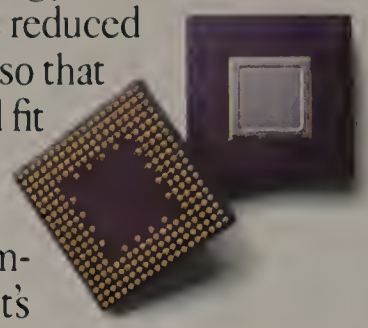
1 The NeXT™ Computer System is the first computer in the world (and so far the only) to use read/write erasable optical storage. While PCs today are typically equipped with Winchester drives that store 20 to 40 MB, a single optical disk can store 256 MB. Plus, it is removable, for portability and added security. This dramatically new technology provides storage that is simultaneously vast, reliable and cost-effective—a combination unmatched by computers of any size.



2 NeXT has made the power of UNIX* usable by mere mortals. UNIX is the high-performance operating system used by workstations to achieve true multitasking and superior networking. Unfortunately, it has always been the antithesis of user-friendly. NeXT has given UNIX a revolutionary new interface—one that is both visual and intuitive. Now computer users of every level can instantly wield this tremendous power, with no technical knowledge whatsoever.



3 To achieve the power needed for the 90s, NeXT bypassed traditional workstation architecture and went directly to that of a mainframe. This eliminates bottlenecks and attains an extraordinary level of system "throughput"—the true measure of computer performance. Only through the use of VLSI (Very Large Scale Integration) technology could this architecture be reduced in size so that it could fit inside a desktop computer. It's a mainframe on two chips.



4 While PostScript* has long been the industry standard for printing, NeXT has made it fast enough to also be used on the display. This "unified imaging model" ensures that what you see on the display is precisely what you will get on paper. All your work, in any size type and any degree of rotation or magnification, appears with perfect 92-dots-per-inch clarity on the NeXT MegaPixel Display. And with laser precision at 400 dpi on the NeXT Laser Printer.

IN THE 90s, WE'
ONLY TEN REAL BREAKTH
HERE ARE SEV



5 The NeXT Computer System is the first to be capable of producing CD-quality sound. Without requiring any additional equipment. This feat is made possible by a chip that has been specifically designed for the task of manipulating sound—the Digital Signal Processor (DSP). Because this processor is standard on every NeXT machine, software developers will be able to call upon its power to enrich programs we use every day. Now computers will not just be seen, but heard.



6 NeXT Mail takes electronic communications beyond anything you've seen on a personal computer before. Now you can send and receive multimedia mail—including text (with varied type fonts, styles and sizes), graphics and voice messages. And despite its high level of sophistication, NeXT Mail is so intuitive, you may not ever need to open the manual. NeXT Mail is built into the system, along with Ethernet and TCP/IP, so the NeXT machine can quickly become a part of existing networks.



7 Programmers can create software on the NeXT Computer up to ten times faster than on any other computer—the result of a breakthrough called NextStep.™ It gives software developers the power to create the graphical user interface portion of their applications (often the most time-consuming and difficult part) without any programming at all. This revolutionary environment means we will see more programs, and better ones, in less time than ever possible before.



These seven breakthroughs will change the way we use computers in the 90s. Which is why Businessland, the leading supplier of computers to corporate America, chose the NeXT Computer System as the workstation they will offer. Call us at 800-848-NeXT, and we'll send you a 28-page brochure describing the NeXT Computer. We'll also give you the address of your nearest Businessland Center. There, you can experience for yourself the first seven breakthroughs of the 90s. And get a good idea where the next three will come from.

L PROBABLY SEE ROUGHS IN COMPUTERS. EN OF THEM.



Circle 485 on reader service card

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Dealers circle 381 on reader service card
End Users circle 187 on reader service card

DECEMBER

APPLE WARRANTY WATCH



72 Months of Inadequate Warranty

My favorite proverb: "The number of potholes in the road proportionally increases in relation to the amount of data stored on the hard disk in your trunk."

How do you get this tome? Write or call Monica Ertel, Apple Computer, 10381 Bandley Dr., #8C, Cupertino, CA 95014; 408/974-2552. It's yours for the asking. When I spoke to Ertel about the book (also available as a HyperCard stack), she warned me that many Mac users assume that the *library* in her group's title refers to software libraries. As a service for the confused, let me spell it out. The Apple Library Users Group actually concerns itself with conventional, traditional libraries where paper is still a valuable commodity.

USER GROUP NEWS

There are 8 million stories in the naked cosmos, and quite a few user groups as well. The Arizona Macintosh User Group is one you shouldn't miss. Contact AMUG through Michael Bean, president, 718 E. Campbell, Gilbert, AZ 85234, or via AppleLink at UG0116.

In other news, the Cowtown Mac User Group changed its phone number after the user group directory went to press. The Fort Worth, Texas, group can now be reached at 817/457-7667.

Okay, I admit it, I have a tough time thinking of online forums as actual user groups, but those in the know tell me such groups are just as official as the real-time, real-space versions that meet once a month. With that in mind, the Mac Symposium of Connect should have been included in the directory (along with some others, I'm sure, who should get in touch with me so I can publicize them). Stuart Gitlow, M.D., is the contact person; reach him at 303/674-7765, via AppleLink at D3207, or via Connect at GITLOW. The old-fashioned can write to 5839 Lone Peak Dr., Evergreen, CO 80439.

The National Macintosh Computer Society can be reached at P.O. Box 26713, Tamarac, FL 33320, or via AppleLink at UG0019. The group's president, Darryl Lewis, wants to hear from user groups who are interested in joining with his group to make health insurance available to members.

"Many members of our executive board are self-employed and are having problems getting affordable health insurance," says Lewis. Other types of clubs offer health benefits, so it occurred to him that user groups might offer them as well. In addition to making insurance more affordable, such a program might help retain the longtime members who tend to drop out, says Lewis, who hopes a larger user group may be able to help out with organizing the coverage. Interested parties can reach him at 305/741-7097.

APPLE EXTENDS REPAIRS

Apple has issued a service notice that adds additional drives to the Apple Hard Disk 40SC repair program. Dealers will replace an internal 3 1/2-inch 40MB disk at no cost if the serial number falls within the range of 335507 to 1250863. (The number is located on the rear of the 50-pin SCSI connectors.) As I mentioned last month Apple will reimburse customers who have paid for repairs outside of warranty; call customer relations at 408/252-2775 for details. This hard disk exchange program is effective through June 1990; tell your friends and neighbors about it if they're having problems booting their disk. M

Send nominees for sainthood to Service Heroes, Macworld, 501 Second St., San Francisco, CA 94107 or via AppleLink (Macworld1) or Connect (Bronscum). Conversely, drop Conspicuous Consumer a line if a company is ignoring you. I will help solve your problem, if I can.

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SEE PAGE 2

WIN THE NeXT COMPUTER



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32-bit color paint program
Page 33

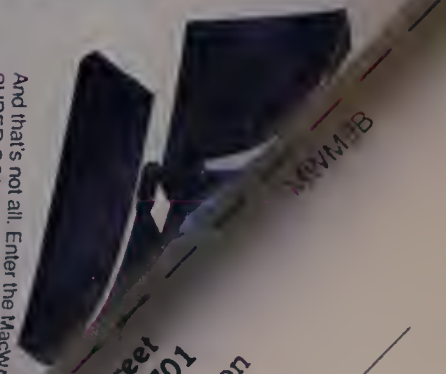


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New page design c...



SIMMS CHIPS
Brainpower for your Mac
Page 33

SUPERCARD
Create...



2

Kerry
Customer Service Director

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BUSINESS SOFTWARE

Fast, powerful, easy to learn word processor



Puts it all together in one package

Works 2.0

Works 2.0 integrates the most-needed office applications: spreadsheet, database, word processor and terminal software. Works provides a significant degree of convenience for anyone who needs to share data among several applications, but hasn't the RAM necessary to run Multi-Finder.

The spreadsheet, with 230 columns and 9,999 rows, behaves like Multiplan or Excel. The word processor looks and acts like Word with Short Menus selected. The new version now includes the Spellswell spelling checker. The word processor has a MacPaint-like Draw command.

The database manager offers a solid selection of standard "flat file" manager functions. You can select and sort records in a variety of ways, and the module supports a useful set of mathematical functions for computed fields.

The simple, easy to use terminal module supports MacBinary transfers for error-free data transmission and reception. Winner of the 1988 *Macworld* World Class Award.

BUS 0014 NCP
Publisher: Microsoft
Suggested Retail: ~~$295~~

$185

Handy tool for technical writers

Formulator

Use Formulator to create mathematical equations and scientific formulas — then paste them into a word processor or DTP document. Special symbols, from Greek characters to integrals and radicals are all built into Formulator. It makes the distinctions among super and subscripts, and normal characters at different levels, and selects the appropriate point size.

WRD0027 NCP
Publisher ICOM Simulation
Suggested Retail $149 95

$89

Bigger, better, and more powerful than ever

Excel 2.2

Excel 2.2 delivers a host of improvements and new features. Excel can now use the full memory of your Mac — up to 8 Megabytes. It recalculates up to 40% faster and empty cells consume no memory at all. Cell annotation lets you add notes to any cell and auditing functions help you trace cell references.

The new Search and Replace function makes global changes. Charting is improved — just double-click anywhere on a chart to see the dialog box for all the chart formatting commands. Charts are now dynamically linked to the original worksheet, so the chart automatically reflects any changes in the spreadsheet. Excel 2.2 also supports "warm links" to Word 4.0, so changes to your spreadsheet data automatically appear in your Word documents.

BUS 0003 NCP
Publisher: Microsoft
Suggested Retail: ~~$395~~

$249



An old favorite gets better

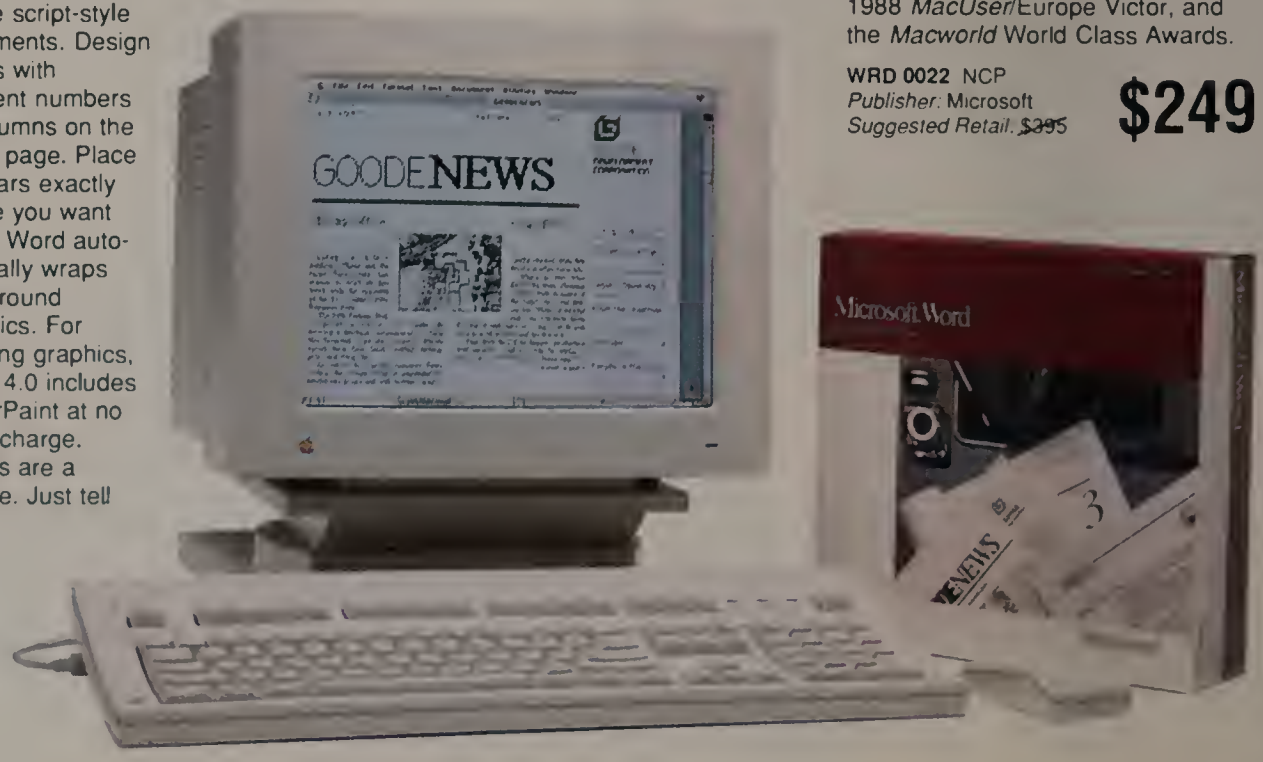
Word 4.0

Word 4.0 adds new page design capabilities to the feature-laden previous versions. Create newsletters with multiple columns, or even movie script-style documents. Design pages with different numbers of columns on the same page. Place sidebars exactly where you want them. Word automatically wraps text around graphics. For creating graphics, Word 4.0 includes SuperPaint at no extra charge. Tables are a breeze. Just tell Word how many rows and columns you need, and it generates your table, with automatic text wraps within cells. Word even has facilities for creating mathematical formulas.

Word 4.0 has a spelling checker, hyphenation, Style Sheets, a glossary, automatic indexing, mail merge, and an integrated outliner. It is compatible with the MS-DOS version of Word, and with PageMaker (both Mac and PC versions), so you can exchange files among all four formats. Version 3.0 won the 1988 *MacUser*/Europe Victor, and the *Macworld* World Class Awards.

WRD 0022 NCP
Publisher: Microsoft
Suggested Retail: ~~$395~~

$249



Brimming over with new capabilities

MacWrite II

MacWrite II now offers multiple columns, mail merge, foot notes and end notes, multiple documents, font sizes from two to 500 points, direct import export of files (for MS Word, MS Write, MS Works, and WriteNow), plus the ability to search and replace by font, size and style.

WRD 0026 NCP
Publisher: Claris
Suggested Retail: ~~$249~~

$185

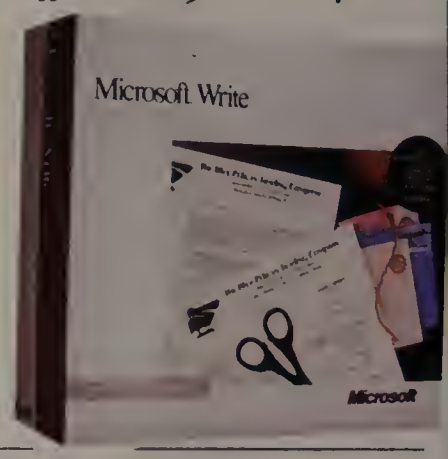
Microsoft's basic, "no-frills" word processor

Write 1.0

Microsoft Write is great for people who like Word but don't need all its fancy functions. Microsoft calls it "a streamlined subset of Word." Write is fast, and full of useful functions, such as a spelling checker with an expandable 80,000 word dictionary, footnoting, the ability to embed graphics in text, multiple columns, page preview mode, and suppression of headers and footers on title pages. If you don't need mail merge, outlining, glossaries, or style sheets Microsoft Write is right for you.

WRD 0014 NCP
Publisher: Microsoft
Suggested Retail: ~~$175~~

$79





Quality, performance and dependability at a low price

Cutting Edge Hard Disk Drives

The Cutting Edge series of hard disk drives (both internal and external versions) plug directly into your Mac's SCSI port and are pre-formatted, so they're ready to use, right out of the box. They're fast, compact, virtually noiseless, and use components from Seagate Technology (the world's leading manufacturer of hard disk drive mechanisms).

The design is not only attractive, but also functional, because it creates a convection cooling current, just as the Mac does. The steel alloy case also helps to radiate heat. All of that means Cutting Edge drives can use a smaller, quieter fan to assist the natural cooling process. A back panel SCSI address switch, plus a second SCSI plug, make daisy-chaining simple and convenient. You can connect up to seven SCSI devices (including scanners and printers) to the Mac, and the address switch tells the Mac where to look for your hard disk on the loop. For greater convenience, the back panel has an extra AC plug.

The internal drives work on the Mac SE, II, IIx, and IIcx. An LED for the front panel indicates disk access. The drives connect directly to the internal SCSI port, so they do not need an address switch. They do not have fans, because the Mac SE and II already have fans. Their rear mount bracket means that you can keep your double internal floppy disk drives.

All Cutting Edge drives carry the manufacturer's one-year warranty, plus a lifetime warranty on the cables and switches. Also, they come with a generous amount of public domain software, the current Apple System and freeware hard disk drive utilities, HD Backup, and a personalized copy of the TCE Manager (formatting and diagnostic software), and an anti-viral package.

HARDWARE
HARD DISK DRIVES

20 Meg Under the Mac Drive
DRI 0157
Manufacturer: Cutting Edge
Suggested Retail: ~~$649~~ **$439**

30+ Meg Under the Mac Drive
DRI 0158
Manufacturer Cutting Edge
Suggested Retail: ~~$749~~ **$499**

45+ Meg Under the Mac Drive
DRI 0159
Manufacturer. Cutting Edge
Suggested Retail: ~~$829~~ **$549**

65+ Meg Under the Mac Drive
DRI 0160
Manufacturer: Cutting Edge
Suggested Retail: ~~$899~~ **$629**

80+ Meg Under the Mac Drive
DRI 0161
Manufacturer: Cutting Edge
Suggested Retail: ~~$1099~~ **$739**

XL 30 Internal
DRI 0110
Manufacturer: Cutting Edge
Suggested Retail: ~~$599~~ **$469**

XL 45 Internal
DRI 0111
Manufacturer: Cutting Edge
Suggested Retail: ~~$799~~ **$645**

Removable cartridges for extra security and protection

Cutting Edge 45MB Removable Hard Drive

The Cutting Edge 45 megabyte removable hard drive provides incredible flexibility. It features a SyQuest™ mechanism, excellent driver software and an average access speed of 25 milliseconds. This high performance drive is actually faster then many fixed drives and provides low cost expandability. Just replace the 45 megabyte cartridge with a new one whenever you need more storage. Since the cartridges are removable you can take them with you or lock them up for security. The Cutting Edge removable hard drive is easy to use, the cartridge just inserts into the receptacle like a tape player cartridge. Ejection is automatic, just use the eject command or drag the icon into the trash can. Cutting Edge removable cartridge drives make backing up and archiving files simple and easy to retrieve. You can share data with any Macintosh computer that is equipped with a Cutting Edge 45 Megabyte Removable Hard Drive. Now transferring large volumes of data between systems is as easy as passing a cartridge around.



DRI 0162
Manufacturer: Cutting Edge
Suggested Retail: ~~$1599~~ **$899**

Inexpensive, dependable external disk drive

800K Disk Drive

The Cutting Edge 800K External Disk Drive makes any Mac easier to use, even if you have a hard disk. It reads and writes both single and double sided floppy disks with equal ease. If you find yourself jumping through hoops every time you need to copy a floppy, you'll appreciate the convenience of having a second floppy disk drive. Just drag the first disk's icon over to the second disk, and let the Mac copy the contents. If you've suffered through the nuisance of trying to boot up a crashed system with a dysfunctional hard disk when you have only a single floppy disk drive, you'll appreciate the extra disk drive. At this price, why put it off?

The Cutting Edge disk drive is quiet, sturdy and reliable, and carries a full one year warranty from the manufacturer. An LED indicates disk access, just like a hard disk drive. For extra convenience, it even has a front panel disk eject button, so you don't have to fool around sticking paper clips through that little hole to retrieve a stuck floppy disk. It's compatible with the Mac Plus, SE, and Mac II, (but won't work with the old 128K or 512K Mac unless you've upgraded it with the new ROMs to a 512KE).



DRI 0042
Manufacturer: Cutting Edge
Suggested Retail: ~~$185~~ **$149**



HARDWARE
PRINTER INTERFACES

Need to hook up a parallel printer to your Mac?

Grappler Interface

The Orange Micro Grappler interface card connects your Mac to most parallel printers. Just plug the Grappler into the serial port, and it converts the output to the Centronics parallel format. If you have an old daisy wheel or dot matrix printer sitting around the office unused, put it to work and alleviate the traffic jam on your LaserWriter.

ACC 0227
Manufacturer: Orange Micro
Suggested Retail: ~~$119~~
$79

Highly intelligent printer interface

Grappler Interface L/Q

The Grappler LQ connects your Mac to any 24-pin dot matrix printer, or HP-compatible laser or ink jet printer — as if they were ImageWriter LQs. Just set the switch for the printer you want to use. For dot matrix printers, you can use any Mac, but for laser and ink jet printers, you'll need a Mac Plus, SE, or II, and a hard disk. Grappler does not recognize PostScript commands

ACC 0237
Manufacturer: Orange Micro
Suggested Retail: ~~$149~~
$103

Connects your Mac to most serial printers

Grappler LS

The Grappler LS works with serial Hewlett-Packard (and compatible) printers. Now you can print Mac documents on the HP ink jet printer, plus laser printers such as the LaserJet, Okidata, Kyocera, and Blaser. Grappler cannot print PostScript files.

ACC 0284
Manufacturer: Orange Micro
Suggested Retail: ~~$129~~
$103


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HARDWARE
INPUT DEVICES

The more keys the better

Mac-101 Keyboard

The only extended keyboard available for the Mac 512, 512KE, and Plus. Includes macro software.

INP 0043
Manufacturer: DataDesk
Suggested Retail: ~~$194.95~~
$139



Mac-101 Keyboard ADB

For the Mac SE.
INP 0047
Manufacturer: DataDesk
Suggested Retail: ~~$194.95~~
$139

Mac-101 Keyboard MacII

For the Mac II.
INP 0048
Manufacturer DataDesk
Suggested Retail ~~$194.95~~
$139

Retire your mouse

New Turbo Mouse

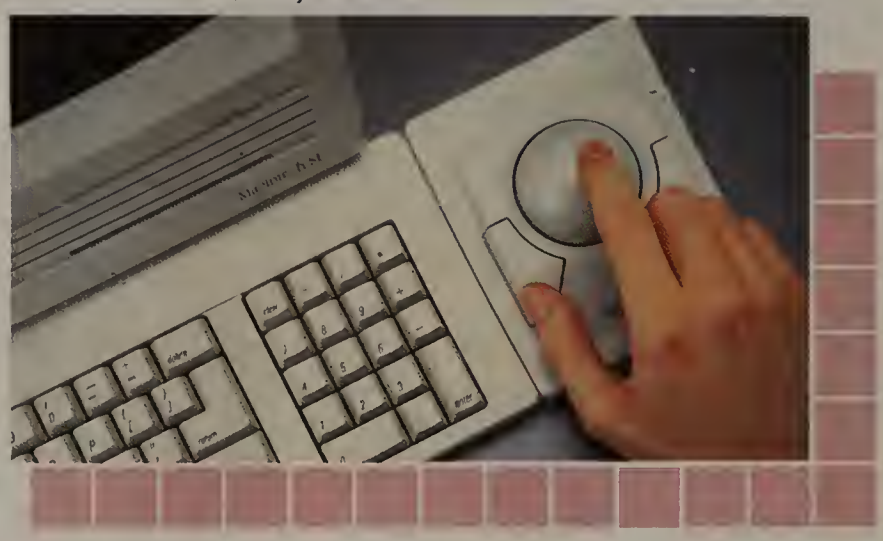
Kensington's New Turbo Mouse speeds up Mac use, and saves desk space. The Turbo Mouse is like an upside-down mouse, or a track ball, so you only need to move the ball in its socket, not the whole assembly. Nudge it for tiny adjustments, or give it a good spin to dash across the screen. The automatic acceleration sensor is like a two-speed automatic transmission. It speeds up cursor movement when you move faster, and slows it down for precise positioning. A second button is a click lock, and you can assign one of seven common functions (Close, Save, Print, etc.) for both buttons at once. This well-designed mouse alternative won the 1988 *Macworld* World Class Award.

New Turbo Mouse 512, Plus

For the Mac 512, 512KE, and Plus.
INP 0059
Manufacturer: Kensington
Suggested Retail: ~~$169.95~~
$109

New Turbo Mouse ADB

For the Mac SE or II.
INP 0060
Manufacturer: Kensington
Suggested Retail: ~~$169.95~~
$109



Enter the world of optical mousing

A+ Mouse

The A+ Mouse has no moving parts, except for the mouse itself. It uses an infrared LED and a reflective plastic mouse pad to determine its position. The mouse glides over the glassy smooth surface of the pad. Anyone who works with graphics or CAE/CAD applications will appreciate the convenience and precision of an optical mouse. Comes with manufacturer's lifetime warranty.

INP 0044
Manufacturer: Mouse Systems
Suggested Retail: ~~$89~~
$63

A+ Mouse ADB

For the Mac SE and II, connects to the Apple Desktop Bus.
INP 0045
Manufacturer: Mouse Systems
Suggested Retail: ~~$129~~
$83



High-tech alternative pointing device

QuadLYNX Trackball

The QuadLYNX Trackball uses Honeywell aerospace technology to give you precise fingertip control over cursor movement. This device offers much greater precision in cursor placement than the standard-issue Apple mouse. Just spin the trackball and the cursor flies across the screen, quickly and accurately landing where you want it.

If you're using a large screen monitor, you need a trackball. It's also great for desktop publishing, CAD/CAM, graphics, and arcade games.



QuadLYNX Trackball

For the Mac 512, 512KE, and Plus.
INP 0050
Manufacturer: Lynx Computer
Suggested Retail: ~~$99.95~~
$69

QuadLYNX Trackball ADB

For the Mac SE or II.
INP 0051
Manufacturer: Lynx Computer
Suggested Retail ~~$99.95~~
$69

Combo joystick and mouse for precise cursor ontrol

Kraft QuickStick

The button placement ensures fast action and comfortable use, whether you're playing an arcade game or working on a complex page layout. Precision gimbals and dual-axis fine-tuners give you complete control over its operation. Comes with manufacturer's five-year warranty.

ACC 0015
Manufacturer: Kraft
Suggested Retail: ~~$59.95~~
$39

Kraft Premium III Joystick

The Kraft Premium III Joystick is the same as the QuickStick, but it connects to the ADB port of the Mac SE or Mac II. It also works with the Apple IIgs.
INP 0064
Manufacturer: Kraft
Suggested Retail ~~$79.95~~
$51

HARDWARE MEMORY UPGRADES



Run your SE up to four times faster with an accelerator

MaraThon 020 Accelerator Boards

MaraThon 020 Accelerators are equipped with a 68020 chip running at 16 MHz. They rival the Mac II's performance, for a fraction of the cost. Because MaraThon 020 Accelerators use a programmable Logic Cell Array controller, you can re-configure them to accommodate future hardware upgrades or to optimize them for specific tasks. The on-board expansion slot gives you back the expansion slot you gave up to install the accelerator.

MaraThon 020 Accelerator MSE1

DRI 0098
Manufacturer: Dove
Suggested Retail: ~~$699~~

$429

MaraThon 020 Accelerator MSE2

Includes one megabyte on-board memory.

DRI 0125
Manufacturer: Dove
Suggested Retail: ~~$1199~~

$719

MaraThon 020 Accelerator MSE3

Includes 68881 Math Co-processor, no memory.

DRI 0126
Manufacturer: Dove
Suggested Retail: ~~$999~~

$599

MaraThon 020 Accelerator MSE4

Includes one megabyte on-board memory and 68881 Math Co-processor.

DRI 0127
Manufacturer: Dove
Suggested Retail: ~~$1499~~

$899

Enjoy maximum speed with an accelerated 68030 chip

MaraThon 030 Accelerator Boards

The MaraThon 030 Accelerator Boards make your Mac II, IIx, or SE/30 sing. They employ a 68030 chip running at 32 MHz, which has its own 256K data and instruction caches on the chip itself (selectable through the Control Panel). Just remove your old 68020 and plug the compact 030 Accelerator card into its socket. The Logic Cell Array controller is programmable for future upgrades or to optimize operations for a specific task.

MaraThon 030 Accelerator Board

For the Mac II. Plugs directly into the 68020 chip socket to provide you with a 69030 chip running at 32 MHz. A 68882 math co-processor is available as an option.

DRI 0130
Manufacturer: Dove
Suggested Retail: ~~$1599~~

$969

MaraThon 030/SE Accelerator Board

For the SE/30. Available options include up to four Megabytes of on-board memory, and the 68881 Math Co-processor or the 68882 Floating Point Unit

DRI 0151
Manufacturer: Dove
Suggested Retail: ~~$1599~~

$1250

MaraThon 030/X Accelerator Board

For the Mac IIx

DRI 0152
Manufacturer: Dove
Suggested Retail: ~~$1599~~

$999

MaraThon Racer

A high-speed cache card with accelerator like performance designed for the Mac II plugs into the existing 68020 socket on the Motherboard

DRI 0181
Manufacturer: Dove
Suggested Retail: ~~$259~~

$162

Open your Mac in a snap

MacSnap Tool Kit

The essential tools for opening up your Mac 512, Plus, or SE to install memory upgrades, adaptor cards and fans. Includes the required hex screw driver, case spreader, and a static strap.

DRI 0040
Manufacturer: Dove
Suggested Retail: ~~$21~~

$15

Bring your Mac up to date - inexpensively

MacSnap Memory for Older Macs



MacSnap memory expansion kits give your old Mac (512, Plus, or SE) the power to run the new generation of software. Using MultiFinder, keep several applications open, and switch from one to another without quittting and launching. Or, explore the exciting world of HyperCard. You'll need at least two Megabytes to run System 7.0 when it arrives. So modernize your old Mac with more memory. It's cheaper than buying a new computer.

MacSnap 524E

Expands enhanced Mac 512KE to one Mb.

DRI 0120
Manufacturer: Dove
Suggested Retail: ~~$299~~

$187

MacSnap 524S

Expands enhanced Mac 512KE to one Mb. Includes SCSI Interface and external SCSI connector.

DRI 0065
Manufacturer: Dove
Suggested Retail: ~~$399~~

$239

MacSnap 548E

Expands enhanced 512KE Mac to two Mb.

DRI 0121
Manufacturer: Dove
Suggested Retail: ~~$699~~

$439

MacSnap 548S

Expands enhanced 512KE Mac to two Mb. Includes SCSI interface and external SCSI connector.

DRI 0068
Manufacturer: Dove
Suggested Retail: ~~$799~~

$499

Unleash your Mac - and save money

MacSnap CMOS Memory

MacSnap CMOS memory expansion kits require less power, so they run cooler than standard RAM chips. Don't settle for that one Megabyte Mac you bought because you couldn't afford the deluxe model. Upgrade it to full power with inexpensive, high-performance MacSnap memory.

MacSnap 2S CMOS

Expands Mac Plus or SE to two Mb. using one Mb. surface mount CMOS chips: expandable to four Mb.

DRI 0122
Manufacturer: Dove
Suggested Retail: ~~$476~~

CALL

MacSnap 4S CMOS

Expands Mac Plus, SE or II from one Mb. to four Mb., with one Mb. surface mount CMSO chips.

DRI 0123
Manufacturer: Dove
Suggested Retail: ~~$952~~

CALL

MacSnap 8S CMOS

Expands Mac II from one Mb. to eight Mb. using one Mb. surface mount CMOS chips.

DRI 0124
Manufacturer: Dove
Suggested Retail: ~~$1904~~

CALL

MacSnap Plus 2

Expands Macintosh Plus from 1024K to 2048K using 256K DRAM. Not expandable.

DRI 0036
Manufacturer: Dove
Suggested Retail: ~~$499~~

$312

MacSnap 2 SE

Expands Macintosh SE from 1024K to 2048K using 256K DRAM. Not expandable but fully compatible with internal expansion cards.

DRI 0099
Manufacturer: Dove
Suggested Retail: ~~$499~~

$312



Affordable Ethernet connections for the Mac

FastNet Ethernet Adaptors

FastNet connects your Macs to Ethernet LANs. It supports TCP/IP, EtherTalk, DECnet, and other protocols, so you can talk to mainframes and minis at Ethernet speeds. The FastNet SCSI and FastNet II are intelligent controllers, with their own 68000 chips and RAM buffers to take the processing load off your Mac.

FastNet SCSI

FastNet SCSI is an external Ethernet adaptor that works with any Mac with a SCSI port. It is an intelligent controller with its own 68000 chip and 512K buffer RAM, but is not as fast as the FastNet NuBus cards.

DRI 0142
Manufacturer: Dove
Suggested Retail: ~~$1249~~

$785

FastNet II

FastNet is an intelligent NuBus card for the Mac II, with 512K RAM, 64K ROM, and a 68000 chip.

DRI 0143
Manufacturer: Dove
Suggested Retail: ~~$899~~

$565

FastNet III

FastNet is a NuBus card for Mac II, but without on-board intelligence and buffering.

DRI 0144
Manufacturer: Dove
Suggested Retail: ~~$599~~

$375



FastNet SE

Plugs directly into the SE's slot, and has 64K RAM and 64K PROM.

DRI 0145
Manufacturer: Dove
Suggested Retail: ~~$599~~

$375

FastNet SE/30

Plugs directly into the SE/30's slot, and has 64K RAM and 64K PROM

DRI 0146
Manufacturer: Dove
Suggested Retail: ~~$599~~

$375

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ONLY $3.00
(See details below)

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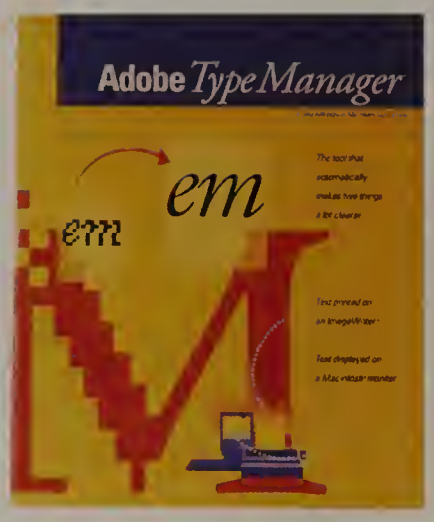
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MacGolf Classic (XOR Corp.)
MacGolf now offers color and improved screen image detail. This premium version has five enlargement options for close-up viewing, nine practice greens, and a driving range. The game comes with all six available MacCourses . Best of all, you can install this version on a hard disk. (entertainment) **$53.**

ACCESSORIES

Apple
Toner Cartridges LaserWriter ..... 109.
Avery Labels (full line available)
Color Coded 3.5 Diskette ..... 4.
Laser 3.5 Diskettes ..... 29.
Laser File Folders ..... 6.
Laser Transparencies ..... 22.
Basic Needs, Inc.
HardTop Keyboard Covers ..... 15.
HardTop ImageWriter Covers ..... 17.
Keyboard Flip ..... 6.
Dust Covers - grey Nylon Ripstop
ImageWriter or LaserWriter ..... 12.
Mac Plus and keyboard ..... 11.
Mac SE and extd. or reg. keyboard 11.
Mac II and extd. keyboard ..... 12.
Universal Laser Printer Stand ..... 29.
Computer Friends, Inc.
MacInker *(IW & IW II)* ..... 41.
Curtis
Computer Tool Kit (52 pc.) ..... 49.
Curtis Clip ..... 6.
Disk Holder (holds 40) ..... 9.
Jewel Surge Suppressors ..... Call.
Ergotron
MacTilt-SE ..... 68.
MacTilt II-RGB ..... 75.
Goldstein & Blair
The Macintosh Bible ..... 20.
I/O Designs
Imageware II Carrying Case ..... 49.
Macinware IIcx Carrying Case ..... 89.
Macinware Mac II Carrying Case ..... 99.
Macinware Plus Carrying Case ..... 64.
Macinware SE Carrying Case ..... 75.
Monitorware Apple RGB Case ..... 79.
Ribbons black ..... 4.
Ribbons color ..... 5.
Kalmar
Rolltop Teak disk holder 45 ..... 14.
Rolltop Teak disk holder 90 ..... 21.
Rolltop Teak disk holder 135 ..... 31.
Kensington
Anti-Glare Filter ..... 33.
Apple Security Kit ..... 34.
Mac II Stand w/Cable Kit ..... 65.
MasterPiece Mac II ..... 105.
PowerBacker 360 UPS Line ..... 269.
System Saver ..... 64.
Mobius Products
Fanny Mac QT ..... 60.
SE Silencer ..... 39.
Polaroid
Circular Polarizing Filter ..... 35.
Read-Write
CompuDuster ..... 29.
Kleen & Dry CRT Pads ..... 5.



Adobe Type Manager (Adobe)
Gives your ImageWriter or Hewlett Packard DeskWriter the professional edge by taking the jagged edge off printed text. Allows you to print the kind of high quality outline fonts you thought only came out of a laser printer. Adobe Type Manager also dramatically improves the text displayed on your Macintosh, making it smoother and more legible than you ever thought possible. Adobe Type Manager is completely transparent to you and virtually every major Macintosh application. Works with every Adobe PostScript printer and all Adobe PostScript language fonts. (fonts) **$57**

Computer Care Kit ..... 45.
Smack-a-Mac
Smack-a-mac..... 9.
SoundSight
FastKeys 2.0 ..... 35.



Macinware Carrying Cases (I/O Designs)
The I/O family of carrying cases protects your Mac and it's peripheral against damage whenever you need to take your Mac on the road. The outer covering is made of luggage quality lightweight woven nylon with web strap reinforcement. Also has an inside padded compartment that can accommodate extended keyboard. The interior is padded to protect the equipment. Comes in Black and Navy. (accessories) Mac SE with extended keyboard **$75.** Full line available.

MaraThon Racer (Dove)
The MaraThon Racer cache card is a cost effective accelerator solution for the Mac II. MaraThon Racer will give you accelerator-like performance. Maximum processing speed and ultimate system flexibility. Just plug in the Racer and drive through your favorite drawing, spreadsheet or wordprocessing applications. For price and performance, Racer is a lap ahead of the competition.(accelerators) **$162.**



Targus, Ltd.
Deluxe Plus/SE-XKB Case (black)...69.
ImageWriter II Case (black) ..... 49.
Mac Plus/SE Case (black)..... 59.

ACCOUNTING AND PERSONAL FINANCES

Aatrix
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Payroll 3.5 ..... 115.
Payroll PLUS orTimeMinder .... ea.175.
Bedford (Computer Associates)
Simply Accounting ..... 219.
Brown-Wagh Publishing
MacLedgers ..... 159.
Service Industry Accounting ..... 209.
DAC
Dac-Easy Light ..... 42.
Intuit
Quicken 1.5 ..... 36.
Layered, Inc.
at Once! ..... 295.
MECA
Managing Your Money ..... 125.
Monogram
Business Sense ..... 269.
Dollars and Sense ..... 81.
Nolo Press
For The Record ..... 29.
WillMaker ..... 32.
Reality Technologies
WealthBuilder ..... 165.
ShopKeeper Software
Bill-It 2.0 ..... 99.
Softview
MacInTax 89 ..... 69.
Taxview 1040 ..... 309.
Survivor
MacMoney 3.5 ..... 60.

BLANK MEDIA

B.A.S.F. made in U.S.A
DS/DD (box of 10) ..... 15.
DS/High Density (1.44 Meg) ..... 29.
Peripheral Land, Inc.
Turbo 40 Cartridge ..... 115.
Sony
DS/DD (box of 10) ..... 15.

BUSINESS AND PRESENTATION

A Lasting Impression
ResumExpert (word vers.) ..... 49.
Adobe Systems, Inc.
TrueForm SetUp ..... 229.

PLUS 1.1 (Olduvai)
HyperCard-compatible Multimedia Software Toolkit that brings you 256 colors, animation , cards and windows of any size, irregularly shaped and word buttons, full text styling and even database fields, to a familiar, HyperCard-compatible environment. Fully programmable using PPL. Use for presentations, education, multimedia, database applications, personal productivity, or just plain fun! Package incl. PPL reference guide, intro. to programming, Online help, external commands, functions and sample stacks. (desktop publishing)
$115.



Win The Mac Portable!



It's here at last. It has all the attributes of your own machine, plus awesome new screen technology, (fifty percent larger than the SE screen), 6 - 12 hour rechargeable batteries and a built in optional 40MB hard disk. Imagine all the power and convenience of your Mac in a 15.7 pound portable package.

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And don't forget, absolutely nobody beats MacWarehouse for great prices, free technical support and fast, dependable, OVERNIGHT service. You won't find a better source for your Macintosh needs.

The New MacPortable 1st PRIZE Prizewinner



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We carry more than 1200 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. If you can't find what you need call us for a free copy of our latest catalog.



MiniCad + 2.0 (Graphsoft)
This year MiniCad+ is the people's choice, winning both the U.S. and Australian MacWorld World Class Awards for CAD. For the price of most 2D CAD packages, MiniCad+ provides 2D, 3D, a hotlinked spreadsheet and a programming language The quality is unsurpassed. Has all the power and ease of use as the "old" MiniCad. Plus you can enter the dimensions of a dialogue box and MiniCad+ will draw the object for you. Change a dimension on a drawing, and the spreadsheet changes accordingly.(cad/cae) **$519.**



Superspool/SuperLaserSpool (SuperMac)
SuperSpool for direct Connect ImageWriters and SuperLaserSpool for all networked or non-networked Apple printers, are best-selling print spoolers that let you work and print at the same time. Fastest spoolers available. Can handle large and complex graphics, spreadsheet or database documents. Special desk accessory allows you to see and manipulate the print queue; delete documents, re-order documents to another printer. (utilities) **Superspool $59. or SuperLaserSpool $89.**



SuperCard (Silicon Beach)
Imports and improves your present HyperCard stacks, Use SuperEdit to create your own stand alone applications that run without SuperCard. Have multiple stacks and types of windows, re-sizeable windows, and color graphics and use different text fonts and styles within a field. Any object can be a button, with an attached script. The paint and draw tools include Silicon Beach's AutoTrace. Bring your applications to life with animation, sound, custom menus and dialog boxes. (hyperware) **$129.**

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FlexForm Bus.Temp Vol 1 or 2 .. ea. 49.
Ashton-Tate
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List & Mail ..... 79.
Clarls
MacProject II ..... 379.
SmartForm Designer w/Assistant .. 299.
Cognition Technology
MacSMARTS PRO ..... 249.
Cricket (Computer Associates)
Cricket Graph 1.3 ..... 115.
Cricket Presents ..... 285.
HyperPress Publishing
Intelligent Developer ..... 225.
Informix
WingZ ..... 259.
Microsoft
Excel 2.2 or PowerPoint 2.1 .... ea.249.
The Microsoft Office ..... 499.
Works 2.0 ..... 185.
Power Up
Calendar Creator ..... 38.
FastForms! ..... 89.
Preferred Publishers
Direct Mail ..... 54.
ProPlus
Wall Street Investor ..... 469.
Satori
Bulk Mailer 3.2.3 ..... 78.



MacEnvelope 4.1 or MacEnvelope Plus (Synex)
Envelope and Label printing in one package! **MacEnvelope 4.1**, combines all of the features of envelope and label printing in one easy -to- use package. Import up to 1600 addresses per file. Unique Postal Bar Coding speeds delivery and saves money on postage (for bulk mailers). Over fifty preformatted ready-to-use label and envelope styles. Create/save layouts, print graphics, messages, fonts and color. **$55. MacEnvelope Plus** saves up to 100,000 addresses per file. Provides list management features such as comments, flags, multi-level sorting and print range. (business) **$149.**

Softstream International
Endeavor ..... 99.
Symantec
More II 2.01 ..... 249.
Symmetry
KeyPlan ..... 339.
Synex
MacEnvelope 4.1 ..... 55.
MacEnvelope Plus ..... 149.
Vertical Solutions
FastLabel ..... 49.

CAD/CAE

Claris
ClarisCAD ..... 599.
Generic Software
Generic CADD Level 1 ..... 85.
Graphsoft
Blueprint ..... 349.

HardPac Mac Drives (Aristotle)
Portable hard disk drive. Store your data and just unplug this compact, self-contained unit, tuck it into your briefcase, and take your data with you. The sturdy injection molded case, shock mounting, and automatic head parking protect the drive while it's in transit.Quantum drive on the 40/80/105mb with access time of 19ms. 20mb uses a Miniscribe with a 65ms access time. A SCSI device with an input/output port for daisy-chaining. (drives) 40 meg **$755.**



MiniCad+2.0 ..... 519.
Innovative Data
MacDraft ..... 144.
Dreams ..... 269.
I.S.I.
Precision ..... 199.
Strata
StrataVision 3D ..... 375.

COMMUNICATIONS

CE Software
In/Out (1 to 5 Users) ..... 129.
QuickMail 2.0 (1-10 Users) ..... 259.
CompuServe
CompuServe Navigator 3.0 ..... 45.
CompuServe Subscription Kit 9.95
DataVIZ
MacLink Plus w/Cable 4.1 ..... 139.
MacLink Plus/Translators 4.1 ..... 109.
Dow Jones
News/Retrieval Membership ..... 24.
FreeSoft
Red Ryder 10.3 ..... 52.
Hayes
Smartcom II 3.1 ..... 88.
Infosphere
Liaison ..... 175.
InSignia Solutions
Soft PC (Mac II) ..... 249.
MetaComet
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Prometheus
Acknowledge ..... 289.
MacKNOWLEDGE ..... 149.
Software Ventures
Microphone II v.3.0 ..... 219.
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Lap-Link ..... 83.

DATABASE SOFTWARE

Acius
4th Dimension 2.0 ..... 549.
AEC Management Systems
AEC Information Manager ..... 409.
Blyth
Omnis 5 ..... 369.
Claris
FileMaker II ..... 229.
Fox Software
FoxBASE+/Mac ..... 255.
FoxBASE+/Mac MultiUser- ..... 355.
Microsoft
File 2.0 ..... 125.
Odesta
Double Helix III ..... 349.
GeoQuery ..... 199.
ProVUE
Panorama ..... 205.

DESK ACCESSORIES

Casady & Greene
QuickDEX ..... 31.
JAM Software
Smart Alarms & Appointment Diary . 49.
Smart Alarms (1 - 4 users) ..... 99.
Smart Alarms (5 - 8 users) ..... 149.
Smart Alarms (9 - 16 users) ..... 199.
Preferred Publishers
DAtabase ..... 72.
Vantage ..... 55.
Solutions
SmartScrap & The Clipper 2.0 ..... 45.

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MicroTV ..... 289.
Aldus
PageMaker 3.02 ..... 389.

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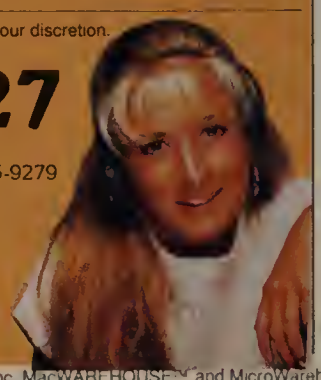
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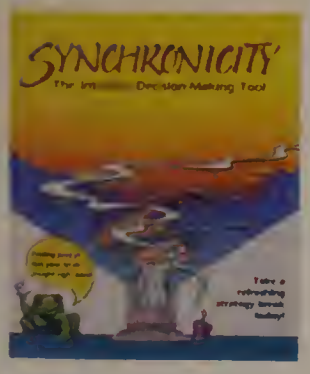
FastLabel
End label hassels with FastLabel - the revolutionary way to print labels on the Imagewriter and laserwriter. Preformatting instantly creates labels. One step text loading from any commercial database. Save hours of your valuable time! (business) **$49.**



Lap-Link Mac
Just connect the Lap-Link Mac universal cable to the PC and the Mac and you're moving files in both directions. Comes with translators, cable, 3.5" and 5.25" diskettes.
(communications) **$83.**



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Synchronicity
A mood-altering software experience that's powerful and fun. This high order tool/game helps you make strategic and personal decisions with wisdom based on timing. Great for relationships, skillful negotiating, and stress reduction. Beautiful art, animated waterfall, and Random Frogs™. Easy, effective, and never boring. Enjoy (education) **$39.**



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A fully integrated software program addressing every aspect of personal and small business finance. Write and print checks, set up a personal budget, estimate your taxes and more. (finance) **$125.**



Balance of Power 1990
Be the leader of the U.S. or the Soviet Union, your main objective is prevent a war. A scary and accurate simulation of the difficulties of improving your country's influence while maintaining world peace. Remember if war breaks out, the game is OVER. (entertainment) **$30.**



Laser Printer Stand
Free up your valuable desktop space by raising your printer four inches. This lets you store two extra cartridges, supplies, or just paper work conveniently underneath your printer. It is made of strong durable steel and comes in an attractive platinum design. (accessories) **$29.**

PageMaker Color Extension ..... 179.
Broderbund
DTP Advisor ..... 47.
Data Translation
PhotoMac ..... 609.
Emerald City Software
Smart Art I, II, or III ..... ea. 85.
Icom Simulations
MacKern ..... 119.
Letraset
ColorStudio or FontStudio ..... Call.
ImageStudio ..... 275.
Ready,Set,Go! ..... 275.
Olduval
Plus 1.1 ..... 115.
Read-It! 2.1 (OCR) ..... 249.
Read-It! Personal ..... 139.
Read-It! TS (Thunderscan) ..... 79.
Quark
QuarkStyle ..... 175.
Xpress ..... 495.
Springboard
Springboard Publisher II ..... 109.
TimeWorks
Publish-It! ..... 239.

DISK DRIVES/BOARDS

Aristotle Industries, Inc.
HardPac Mac 20 Meg ..... 479.
HardPac Mac 40 Meg ..... 755.
HardPac Mac 80 Meg ..... 1099.
HardPac Mac 105 Meg ..... 1235.
CMS
MacStack 20 Meg ..... 529.
MacStack 30 Meg ..... 545.
MacStack 45 Meg ..... 625.
MacStack 60 Meg ..... 699.
MacStack 80 Meg ..... 799.
Cutting Edge
800K External Floppy Drive ..... 149.
SyQuest Removable 45 Meg ..... 899.
Under the Mac 20 Meg ..... 439.
Under the Mac 30+ Meg ..... 499.
Under the Mac 45+ Meg ..... 549.
Under the Mac 65+ Meg ..... 629.
Under the Mac 80+ Meg ..... 739.
Dayna Communications
Dayna File Single 360K (5 1/4") .... 529.
Dayna File Dual 360K & 1.44M .... 729.
Dolphin Systems Tech
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Integra 30 Meg ..... 595.
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Integra 60 Meg ..... 778.
Integra 80 Meg ..... 995.
Flipper 150 Meg Tape Backup ..... 1439.
Kennect Technology
Drive 2.4 ..... 359.
Rapport ..... 219.
Mobius
MultiScreen Video Card ..... 315.
PCPC
MacBottom Hard Drives ..... Call.
Peripheral Land, Inc.
Infinity Turbo 40 Meg ..... 1119.
Turbo Floppy 1.4 ..... 359.
Quantum
Quantum 40 MB Raw Drive ..... 525.
Quantum 80 MB Raw Drive ..... 869.
RasterOps
RasterOps Colorboard 264 ..... 760.





Shortcut (Aladdin Systems, Inc.)
Raymond Lau, author of StuffIt, has created another utility that you cannot live without. Shortcut-the ultimate disk utility-appears in every application's OPEN and SAVE dialog with a menu full of vital commands. A find command will locate lost files, you can instantly access frequently used files and folders with a single menu selection, create new folders, rename or delete files/folders. (utilities) **$59**

EDUCATIONAL PERSONAL

BrightStar
Alphabet Blocks 3.01 ..... 30.
Talking Tiles ..... 27.
Bootware Software
ResumeWriter Pro ..... 58.
Davidson
Math Blaster ..... 27.
Speed Reader II ..... 36.
First Byte
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The Puzzle Storybook ..... 27.
The Rhyming Notebook ..... 27.
Fair Tide Technologies
Navigate! mono ..... 199.
Great Wave
KidsTime 1.2 ..... 26.
NumberMaze ..... 26.
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Reader Rabbit or Math Rabbit ..... 31.
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Elementary Signer ..... 49.
Finger Speller ..... 29.
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Mavis Beacon Teaches Typing ..... 32.
Visionary Software
Synchronicity ..... 39.
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Word 4.0 Video Tape ..... 35.

ENTERTAINMENT

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World Class Leader Board ..... 27.
Artworx
Bridge 6.0 ..... 24.
Daily Double Horse Racing ..... 19.
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Ferrari Grand Prix or P51 ..... ea 32.
Fokker Tri-plane ..... 24.
Centron Software, Inc.
BlackJack or CrapsMaster ..... ea 27.
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Discovery Software
Arkanoid ..... 26.

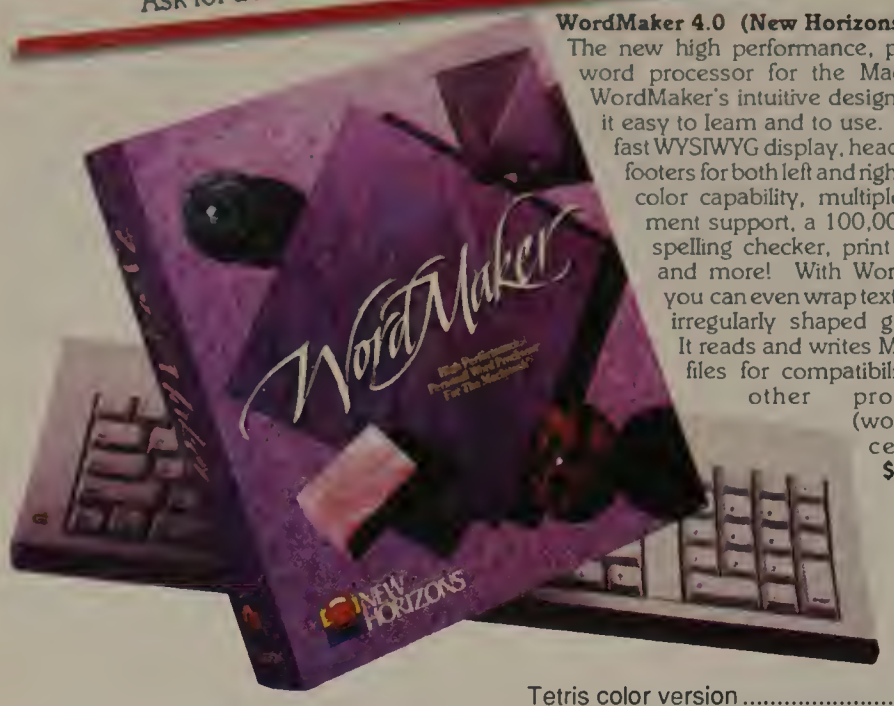


Macintosh SE/Plus w/Extended Keyboard Carrying Case (Targus)
Pamper your Mac with a Targus carrying case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for everything from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. (accessories) **$75.** Full Targus Macintosh line available.

GUARANTEE

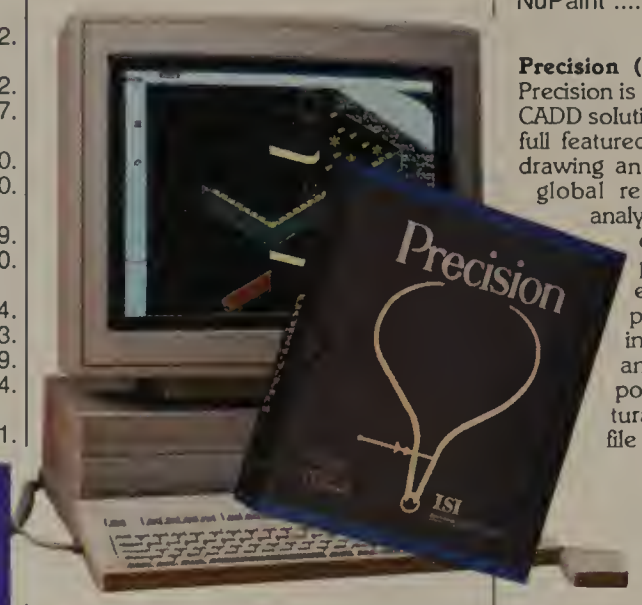
Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

OVERNIGHT DELIVERY ONLY $3.00



WordMaker 4.0 (New Horizons)
The new high performance, personal word processor for the Macintosh. WordMaker's intuitive design makes it easy to learn and to use. It has a fast WYSIWYG display, headers and footers for both left and right pages, color capability, multiple document support, a 100,000 word spelling checker, print merge, and more! With WordMaker you can even wrap text around irregularly shaped graphics. It reads and writes MacWrite files for compatibility with other programs. (word processing) **$69.**

Electronic Arts
Chuck Yeager Adv. Flight Trainer .... 32.
Miles Computing
Fool's Errand .... 32.
Puzzle Gallery .... 27.
Mindscape
Balance of Power, Deja Vu .... ea. 30.
The Colony or Gauntlet .... 30.
Nemesis
Go Master .... 49.
Joseki Tutor .... 30.
PCAI/XOR
Lunar Rescue or MacGolf 2.0 .... 34.
MacGolf Classic .... 53.
Road Racer .... 39.
NFL Challenge .... 54.
Spectrum HoloByte
Falcon 2.0 .... 31.
Tetris color version .... 24.
Springboard
Hidden Agenda .... 36.



Precision (I.S.I.)
Precision is a high performance 2-1/2D CADD solution for the Macintosh. This full featured package offers extensive drawing and editing features such as global replace symbols, in-depth analysis, powerful macro files and complete dimensioning capabilities. Precision at no extra charge includes a complete range of plotter drivers, import/export utilities for DXF and IGES files, 800 phone support and over 1000 architectural and mechanical symbol file kit. (cad/cae) **$199.**

Broderbund
Drawing Table .... 75.
TypeStyler .... 129.
Casady & Greene
Vivid Impressions Vol. 1 .... 67.
Claris
MacDraw II .... 299.
MacPaint 2.0 .... 99.
Cricket (Computer Associates)
Cricket Color Paint .... 179.
Cricket Draw .... 167.
Deneba
Canvas 2.0 .... 169.
Dream Maker
Cliptures, Business Images .... 69.
MacGallery .... 27.
Electronic Arts
Studio/1 .... 99.
Studio/8 .... 299.
MacroMind
MacroMind Accelerator .... 149.
MacroMind Director .... 449.
VideoWorks II .... 175.
Miles
Mac The Knife (all volumes) .... 32.
Mindscape
ZING .... 139.
Multi Ad Services
ProArt: Bus., Sports or Holidays ea.95.
NuEquation
NuPaint .... 89.



Fokker Triplane Flight Simulator
Flown by the Red Baron, this is the realistic simulation with fun in mind. You'll be able to fly and land this aircraft. No need to spend hours studying complicated instructions. Includes dogfights, bombing, balloon busting, and a bridge. Runs on all Macs. (entertainment) **$24.**



SmartOne Modem 2400/1200
Receive Electronic mail, check out stock portfolios or flight reservations. Features include Quicklink, MacNet, CompuServe, auto dial and a two year warranty. (modems) **$145.**



SmartScrap & The Clipper 2.0 is a pair of desk accessories used to store and resize graphics. SmartScrap is an improved scrapbook with multiple scrapbooks, scrollbars, a visual Table of Contents, Marquee and Lasso. The Clipper provides cropping and scaling tools to any program you're using.(desk accessories) **$45**



FileGuard Extended Edition (A.S.D.)
Protect your hard drives from unauthorized access (including security bypass with a system diskette), copying, and erasure. Applications and files from unauthorized access, deletion, and/or illegal copying ; Desktop (including system folder) from alterations by unauthorized users **$309. FileGuard 2.0** Protects files from unauthorized access, deletion, and/or illegal copying. Upon saving a new document, FileGuard gives you the option to password protect it Encryption is performed automatically upon quitting your application Opening a protected file is just as easy and automatic. (security) **$125.**

The Software Toolworks
Chessmaster 2100 .... 32.
Life & Death .... 32.
The Hunt for Red October .... 32.

FONTS

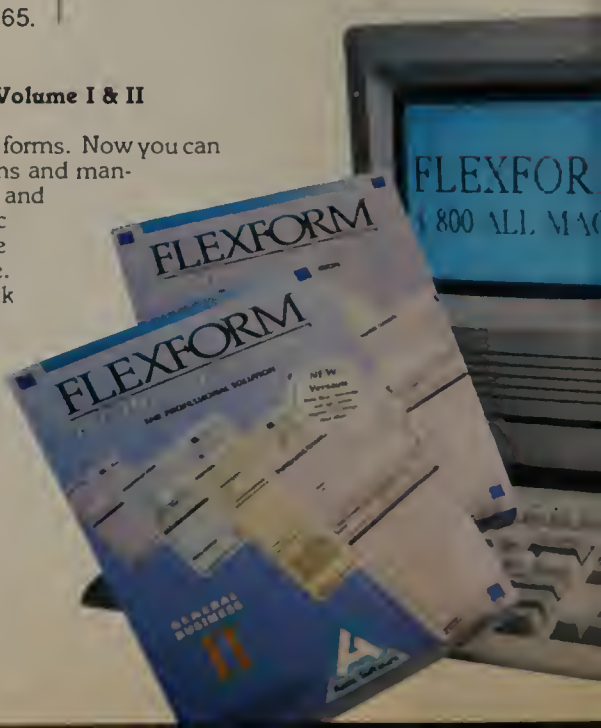
Adobe
Adobe Type Manager .... 57.
Fonts (full line avail.) .... Call.
Forms and Schedules .... 289.
Newsletters .... 239.
Presentations .... 289.
Textures, Fills, and Patterns .... 139.
Altsys
Fontastic Plus 2.02 .... 52.
The Art Importer 2.0 .... 89.
Letraset
LetraStudio .... 275.
LetraFonts *(various)* .... ea. 69.
Tactic Software
ArtFonts Vol.I or 2 .... 55.
Orange Micro
Alphabits .... 69.

GRAPHICS AND DESIGN

3G Graphics
Images w/Impact
Graphics & Symbols 1 .... 52.
Business 1 .... 65.
Adobe
Illustrator 88 .... 289.
Streamline .... 229.
Aegis Development, Inc.
Showcase F/X .... 199.
Aldus
Freehand 2.0 .... 349.

Paracomp
ModelShop .... 399.
Swivel 3D .... 259.
Select Micro Systems
MapMaker 4.0 .... 245.
Silicon Beach
Digital Darkroom .... 249.
Super 3D 2.0 .... 319.
SuperPaint 2.0 .... 128.
SuperMac
PixelPaint 2.0 .... 229.
PixelPaint Professional .... 399.
Tactic Software
Art Clips .... 51.
SoundClips .... 49.
Zedcor
Deskpaint 2.0 .... 65.

Flex Form Business Templates Volume I & II (Antic Software)
A library of professional business forms. Now you can electronically fill-in business forms and manage business form data quickly and easily. Built in help, automatic field suggestions, and logic make filling in forms fast and error free. On-line database allows quick search and sort on any form-field(s). Import your own company logo or graphics. For data analysis, export form data for use with other programs. **Volume I:** Billing, Collecting, Delivery, Sales, Production, Stock Keeping and General Office. (business) **$49.**
Volume II: Accounting, Dispersing , Payroll, Human Resources, Purchasing, and General Business. **$49.**



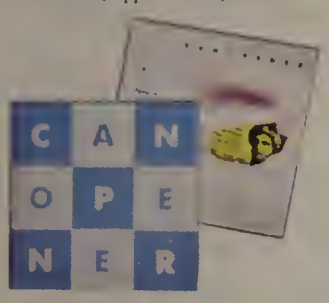
MacWAREHOUSE™ 1-800-255-6227



Mac-101 Keyboards (Data Desk International)
Features 101 keys including a numeric keypad, a separate T shaped cursor keypad, Cancel Key, Option and Command keys at both ends, definable function keys, plus scrolling, page control, and zooming keys. Manufacturer's two year warranty International Versions also available. (input/output) **$139.**



HyperBible
Put new life into your study of the Bible. Over 100,000 notes and cross references. Easy word and phrase search of scripture. Ready made studies for meetings. Available in the New International Version **$179.** or the King James Version (hyperware) **$149.**



CanOpener
The information retrieval utility for the Mac. Search anywhere, and lets you retrieve just about anything; including text, pictures and sounds. It even locates text inside pictures, and gives you the whole picture! Anything retrieved can be stored in it's library, so the next time you need it, it's just a click away. (utilities) **$65.**



New HyperDA Version 1.2
Gives you access to HyperCard stacks within any application or the Finder. Stacks work as they do in HyperCard Change your stack screen to an expandable , scrollable window for easy access. Add or modify text in the existing text files, while saving new or modified information to the original stack independently of HyperCard. (hyperware) **$49.**

HARDWARE AND PERIPHERALS

Cutting Edge
Two Page Monochrome Monitor .... 999.
DEST
Dest PC Scan Plus ..... SPECIAL 699.
General Computing Company
WriteMove Ink Jet Printer ..... 585.
Magnavox
Color Monitor 14" ..... 599.
Microtek
Microtek MSF-300GS Scanner .... 1589.
Qume
Crystal Print Publisher ..... 3445.
Seikosha America
Seikosha Printer (dot-matrix) ..... 235.

Two Page Monochrome Monitor (Cutting Edge)
Every Mac SE and II user can now justify the expense of a big screen with the new Cutting Edge 19" Two Page Monochrome Display System. The Cutting Edge Monitor includes the interface card and matches just about all the features of other big screen display systems costing twice as much. It has a flicker-free refresh rate of 70 herz and a high resolution of 72 DPI. Like all Cutting Edge products it comes with a one year warranty and a 30 day money back guarantee. (hardware) **$999**

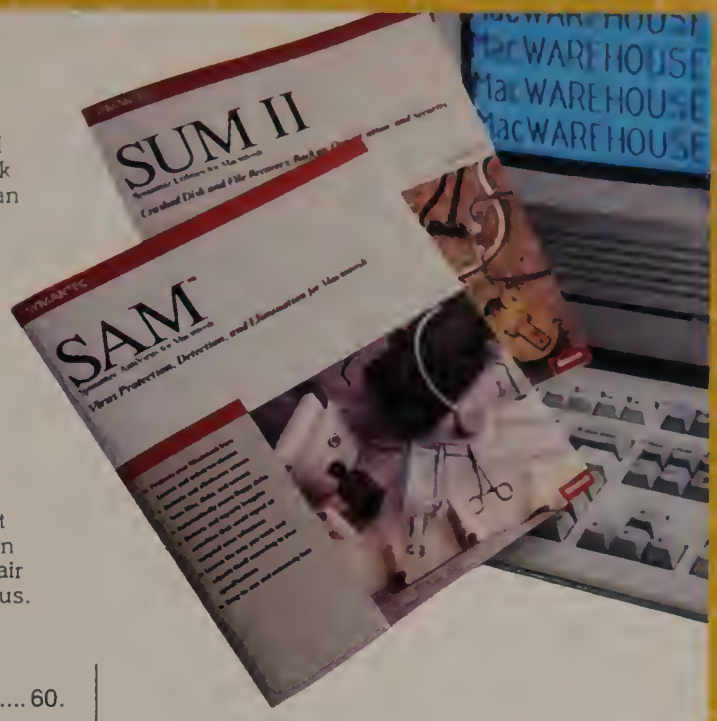


Sharp
The Wizard ..... 249.
ThunderWare
LightningScan ..... 379.
ThunderScan 5.0 ..... 189.

HYPERWARE

Activision
Focal Point II ..... 117.
Reports for HyperCard ..... 69.
Bantam
Complete HyperCard Handbook ..... 23.
Beacon Technologies
HyperBible International Version ... 179.
HyperBible King James Version .... 149.
BrainPower
ArchiText ..... 199.
Bright Star Technology
HyperAnimator 1.5.1 ..... 99.
DataDesk International
HyperDialer ..... 26.
ICOM Simulations
HyperTMON ..... 59.
MicroMaps
HyperAtlas ..... 59.
Power Up
HyperTutor ..... 29.
Silicon Beach
SuperCard ..... 129.
Softstream International
HyperHit ..... 125.
Springboard
Family Matters ..... 28.
Symmetry
HyperDA 1.2 ..... 49.

SUM II and SAM offer safety and security from data loss due to disk failure and viruses. **SUM II** is an award winning disk utility that performs crashed disk and deleted file recovery, backup, encryption for confidential files and folders, and disk optimization. **$95.**
SAM is designed to keep a virus from infecting your Macintosh. SAM automatically scans floppy disks when they are inserted, and will automatically scan your system folder when you start up your Mac. SAM can detect known and unknown viruses and can repair files infected with a known virus. (utilities) **$63.**



TimeWorks
HyperWorks Organizer ..... 60.
Trendware Corporation
HyperTools #1 or #2 ..... ea. 52.
XCAL ..... 79.

INPUT/OUTPUT

Cutting Edge
CE-105 ADB Keyboard ..... 125.
DataDesk Intl.
Mac 101 Keyboards ..... 139.
Kensington
New Turbo Mouse ..... 109.
Koala
MacVision 2.0 ..... 219.
Kraft
ADB Joystick Premium III (SE&II) .... 51.
QuickStick ..... 39.
Kurta
IS/ADB Tablet 8 1/2 x 11 ..... 255.
Mouse Systems
A+ Mouse (SE/II) ..... 83.
A+ Mouse (512/Plus) ..... 63.
Summagraphics
Bit Pad Plus ..... 325.

LANGUAGES

Digitalk, Inc.
Smalltalk/V MAC ..... 129.
Microsoft.
QuickBasic ..... 65.
Shana Corporation
Inside Out ..... 369.
SmethersBarnes
Prototyper ..... 189.
Symantec
THINK'S C 4.0 ..... 159.
THINK'S Lightspeed Pascal ..... 85.
Zedcor
ZBasic 5.0 ..... 95.

MEMORY UPGRADES/ ACCELERATORS

1 MEG SIMMS
Low Profile, 100ns High Quality
Single In-Line Memory Modules
for MacPlus, SE, II, IIx.
2 yr. Warranty. .... **New low price $119.**

Dove (full line available)
MaraThon 030 Accelerator ..... 969.
MaraThon 030X ..... 999.
MaraThon Racer ..... 162.
MacSnap 2S ..... Call.
MacSnap 4S ..... Call.
MacSnap 8S ..... Call.
MacSnap 524E ..... 187.
MacSnap 524S ..... 239.
MacSnap 548S ..... 499.

MODEMS/FAX

Abaton
InterFax12/48 ..... 269.
Best Data Products
SmartOne 2400/1200 ..... 145.
Hayes
Smartmodem 1200 ..... 295.
Smartmodem 2400 ..... 429.
Smartmodem 9600 (V series) ..... 985.

HyperDialer (Data Desk)
Connect your Mac to your existing telephone for automatic dialing with Apple's HyperCard. HyperDialer is designed specifically for HyperCard's touch-tone dialing capabilities and works with-line business phones. Automatically dials HyperCard, SideKick, Focal Point, C.A.T., SuperCard and QuickDex phone numbers. It requires no modem and no expensive , dedicated phone lines; connects to Mac speaker port - not a precious serial port. (hyperware) **$26.**





GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.



Omnis 5 (Blyth)
A comprehensive program for developing business data managements applications. It is a multi-user, multi-platform database management system for the Macintosh and IBM compatible personal computers. SQL connectivity allows Omnis 5 to connect to the VAX or mainframe. Omnis 5 supports full color graphics producing totally "Mac-like" applications. Omnis Hypercard access allows HyperCard stacks to read and write to Omnis 5 data files in both single and multiuser installations. (database) **$369.**

Prometheus
ProModem 2400 SE Int. ..... 209.
ProModem 2400M ..... 199.
Supra
Supra Modem 2400 ..... 139.
US Robotics
Courier 9600 Modem ..... 699.

MUSIC AND SOUND

Altech
MIDI Interface ..... 59.
Bogas Productions
Super Studio Session 2.0 ..... 69.
Coda
Finale ..... 479.
MacDrums ..... 31.
Perceive ..... 50.
Electronic Arts
Deluxe Music Construction 2.5 ..... 85.
Esthetic Engineering
Music Mouse ..... 49.
Farallon Computing
MacRecorder (records sound) ..... 164.
Screen Recorder ..... 129.
First Byte
SmoothTalker ..... 33.
Great Wave
Concertware+MIDI 4.0 ..... 78.
HIP Software
Harmony Grid ..... 59.
Intelligent Music
OvalTune ..... 95.
Passport Designs
Master Tracks Pro 3.0 ..... 259.
NoteWriter ..... 325.
Passport MIDI Interface ..... 89.
Primera Software
Different Drummer ..... 59.
Repertoire
Music Publisher ..... 375.
Resonate
Listen 2.0 ..... 62.



GOfer (Microlytics)
Gofer 2.0, a powerful software utility for searching, finding and retneving text, is now 50% faster. Works with bestselling word processors, DTP files and utilities. GOfer retneves text from a public file on popular file servers without needing file or folder names With GOfer you can quickly access scanned information from OCR applications. (utilities) **$47.**

NETWORKING PRODUCTS

Connect Inc.
MacNet ..... 47.
Dove
FastNet SCSI ..... 749.
FastNet III ..... 375.
FastNet SE or SE/30 ..... ea. 375.

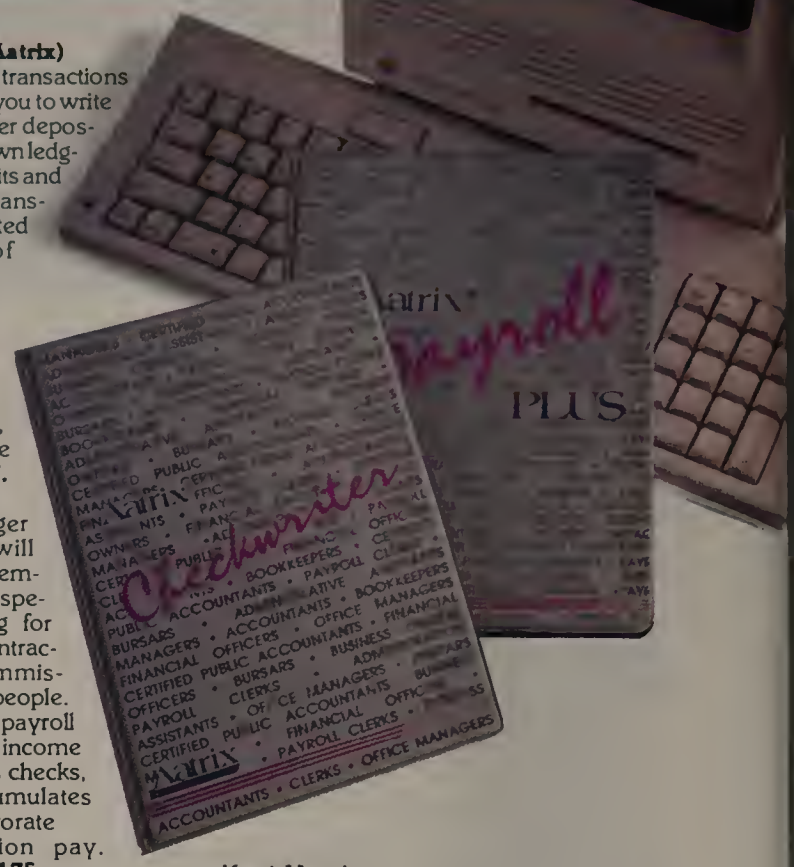


Sound Clips (Tactic Software)
Why prepare a presentation only half-way? Add high-quality professional sounds. Over 115 sound effects in each Vol. for a wide variety of uses. Bring MultiMedia presentations closer to the main stream of Macintosh users. **Sound Clips Vol 1** includes 118 sounds, airplanes, wind, coughs, modem dial, fax, laugh, cry, adding machine, hacksaw, etc...**Vol.2** includes 122 sounds, glass break, baby cry, dog bark, hammer, cork pop, sax, seas, night train, taps, door open/close, etc... (graphics) **$49.**

Farallon
Timbuktu 3.0 ..... 99.
Timbuktu Remote 1.0.1 ..... 195.
TrafficWatch ..... 135.
PhoneNET PLUS ..... 35.
PhoneNET Repeater ..... 325.
PhoneNET Star Controller ..... 1095.
Microcom Software
Carbon Copy Mac ..... 119.
Shiva
NetBridge ..... 339.
NetSerial X232 ..... 279.
TOPS
NetPrint ..... 119.
FlashBox ..... 125.
FlashCard ..... 159.
Repeater ..... 129.
Teleconnectors ..... 29.
TOPS ..... 145.
TOPS DOS ..... 115.

SECURITY AND VIRUS PROTECTION

ASD Software, Inc.
FileGuard 2.0 ..... 125.
FileGuard Extend (office 5-pak) ..... 309.
TWINS ..... 109.
HJC Software, Inc.
Virex 2.1 ..... 59.



Checkwriter (Aatrix)
Enter recurring transactions and it reminds you to write checks and enter deposits. Print your own ledgers, debits/credits and tax sheltered transactions. Unlimited number of checking accounts and transactions per account. Lets you design your own check and stub, and will write them too! **$37.**
Payroll Plus
Made for larger companies; will handle many employees, plus special accounting for restaurants, contractors, and commissioned sales people. Can manage payroll from up to 10 income sources. Prints checks, itemizes, accumulates O/T and can prorate sick / vacation pay. (accounting) **$175.**

Kent Marsh
MacSafe or NightWatch ..... ea. 87.
QuickLock ..... 57.
Mainstay
AntiToxin ..... 59.
Symantec Corporation
S. A. M. ..... 63.

SPELLING/DICTIONARY THESAURUS CHECKERS

Deneba Software
BigThesaurus ..... 59.
Spelling Coach Pro ..... 115.
Electronic Arts
Thunder II ..... 52.
Lexpertise
MacProof 3.2.1 ..... 115.
Microlytics
Electronic Word Finder ..... 75.
Word Finder 2.0 ..... 36.
Sensible Software
BookEnds or Sensible Grammar ..... 53.

STATISTICAL ANALYSIS

Abacus Concepts
StatView II ..... 295.
StatView SE+Graphics ..... 225.
BrainPower
StatView 512+ (requires 512k) ..... 149.
D2 Software
MacSpin 2.0 ..... 189.



Casino Master (Centron)
Become a Master of Casino Gambling! Five separate casino games include **Blackjack Ace, Crapsmaster, Roulette Master, Pokermaster, and Baccarat Master.** Exact table simulation, betting, bankroll, stored win/lose statistics and manual included. Now in dazzling color on the Mac II!! Recommended and used by professional gamblers! (entertainment) **$27.** each game or 5 game Casino Master Package for **$49.** or Deluxe Mac II color version for **$55.**

CompuServe

You can now contact MacWAREHOUSE or place orders with us in the **Electronic Mall** on CompuServe. The **MacWAREHOUSE GO code** is **GO MW**. As always, you'll get fast, dependable overnight service and you can leave messages for Kerry or any of our support staff.



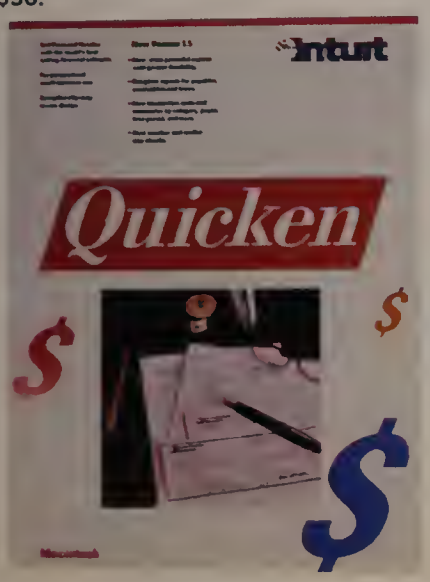
BackMatic (Magic Software)
Because the most important work is the work in progress, backing up once a week may not be enough. BackMatic will backup your hard drive every day when you select Shut Down. BackMatic will copy your work to floppy, hard drive or network server. If you never ShutDown, BackMatic's automatic timer will do backups at preselected times. Even if you already own a traditional backup program, you'll still want BackMatic to help backup between backups. BackMatic - fast, simple and totally automatic.(utilities) **$50.**

Odesta
Data Desk Professional ..... 289.
Paracomp
Milo ..... 159.
Select Micro Systems, Inc.
Exstatix ..... 219.
Wolfram Research
Mathematica (SE) ..... 450.

UTILITIES

Abbott Systems
CanOpener ..... 65.
Affinity
Tempo II ..... 79.
Aladdin Systems Inc.
Programmer's Assistants ..... 99.
Shortcut ..... 59.
ALSoft
DiskExpress II ..... Call.
Font/DA Juggler ..... 42.
MultiDisk ..... 49.
Master Juggler ..... 64.

NEW Version 1.5! Quicken (Intuit)
Forget financial hassles with Quicken, the world's #1 selling finance software. It's the absolute fastest, easiest way to do your personal or small business bookkeeping. Quicken slashes the time you spend on your finances by automating all your routine financial tasks, from printing recurring checks without typing, to providing detailed tax deduction summaries instantaneously. Flexible, comprehensive financial reports on screen or on paper, income and expenses by category, budget vs. actual comparisons, and more. (finance) **$36.**



Berkeley System Design, Inc.
Stepping Out II ..... 50.
CE Software
DiskTop 3.0.2 ..... 32.
QuicKeys 1.2 ..... 65.
Caere
OmniPage ..... 555.
Central Point Software
Copy II Mac (with MacTools) ..... 24.
PC Tools Deluxe For Mac ..... 46.
Dantz Development
Retrospect ..... 155.
Emerald City Software
Lasertalk 1.0 ..... 159.
Fifth Generation
FastBack II or DiskLock ..... ea.108.
PowerStation 2.5 ..... 34.
Pyro ..... 15.
Suitcase II ..... 45.
GO Technologies
MacTree Plus ..... 46.
ICOM Simulations
On Cue ..... 35.
Insight Development
MacPrint ..... 79.
Magic Software
AutoSave II ..... 29.
BackMatic ..... 50.
POWERicons or POWERmenus ea. 39.
Mainstay
Capture 2.0 ..... 49.
Microlytics
GOfer ..... 47.
Olduvai
ClipShare ..... 139.
MultiClip ..... 51.
PCPC
HFS Backup 3.0 ..... 54.
Peripheral Land, Inc.
TurboBack ..... 55.
TurboCache or Turbo Spool ..... ea. 73.
TurboOptimizer ..... 39.
Preferred Publishers
Exposure ..... 54.
SuperMac
DiskFit 1.5 or SuperSpool 5.0 .... ea. 59.
Sentinel 2.0 ..... 89.
SuperLaserSpool 2.0 ..... 89.
Symantec Corporation
SUM II ..... 95.
Tactic Software
FontShare 2.0 ..... 149.
Williams & Macias
DiskFinder ..... 27.
myDiskLabeler ..... 34.
StickyBusiness 1.07 ..... 89.
XTree Company
XTree Mac ..... 52.

WORD PROCESSORS AND OUTLINERS

DeltaPoint, Inc.
MindWrite 2.1 ..... 95.
Ashton-Tate
FullWrite Professional ..... 259.
Claris
MacWrite II ..... 185.
Microsoft
Word 4 ..... 249.
New Horizons Software
WordMaker ..... 69.
Niles & Associates
End Note ..... 75.
Symmetry
Acta Advantage w/DA ..... 65.
T/Maker
WriteNow 2.0 ..... 109.
WordPerfect Corp.
WordPerfect ..... 189.
Working Software
QuickLetter ..... 73.

CONTEST RULES 1. Entries must be received on or before 4/30/90. 2. Winners selected in random drawings by attorneys for Micro Warehouse Inc. (MWH), whose decisions are final. 3. Mac Portable Computer prize subject to availability MWH reserves the right to substitute wholesale cash value up to $6,000. 4. Winners responsible for taxes. 5. Odds of winning depend on number of entries. All prizes will be awarded. 6. MWH will announce the winners on or around 5/31/90. Winners notified by mail. Dates subject to change at the discretion of MWH. If unable to contact any winner, an alternate will be selected by random drawing. 7. Contest open to US residents, except where prohibited by law. Employees of MWH and suppliers not eligible. 8. Prizes: one Mac Portable with 40MB hard disk and 150 software and media prizes.

STOP PRESS



NEW!
Price breakthrough!
Under the Mac Drives (Cutting Edge)
The Cutting Edge Under the Mac Drive hard disk drives are quiet and reliable with access times down to 20 milliseconds making it almost three times faster than most. Push button external SCSI address switch and removable SCSI terminators allow easy daisy chaining up to 7 SCSI devices. Sizes available 20 meg to 80 meg (disk drives)
20 meg only $439.
30+ meg only $499.
45+ meg only $549.
65+ meg only $629.
80+ meg only $739.



800K Drive
The Cutting Edge 800K drive's attractive styling, quiet performance, and high-tech reliability make it our most popular floppy drive. Features an LED light to indicate disk access and a hinged door over the disk insertion slot to keep the mechanism clean. One year manufacturer's warranty. (disk drives) **$149.**



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The MacWarehouse™ Go Code is GO MW. As always, you'll get fast, dependable, overnight service and you can leave messages for Kerry or any of our support staff

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There's never been a time like now to join CompuServe

To order call Kerry at:



MacWAREHOUSE
1-800-255-6227

Tomorrow's Upgrade For Your Mac Is Only $119.*



A MacWarehouse Memory Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable, overnight service will have your Kit in your hands tomorrow!

MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. You don't even need a soldering iron. Just open your Mac, slide out the main circuit board, and plug in your memory card. Complete installation instructions are included with each memory kit.



WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs — (2@ $119).

The chart explains exactly what you need to achieve the desired level of performance.

To upgrade a 4-socket Mac Plus or SE to this amount of memory	Do this: (install in multiples of two only)
2 MB	Remove all four existing 256K SIMMs, install two 1M SIMMs, leave two sockets for future expansion.
2½ MB	Remove only two 256K SIMMs, install two 1M SIMMs.
4 MB	Replace all four 256K SIMMs with four 1M SIMMs.
To upgrade an 8-socket Mac II, IIx, IIcx, or SE30 to this amount of memory	**Do this: (install in multiples of four only)**
4 MB	Remove all four existing 256K SIMMs, install four 1M SIMMs, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMs, install four 1M SIMMs in remaining sockets.
8 MB	Remove all four 256K SIMMs install eight 1M SIMMs.

To open your Mac Plus or SE, you'll need a specially designed tool — it's available from us as part of a handy tool kit for just $15.

WHAT YOU NEED TO KNOW

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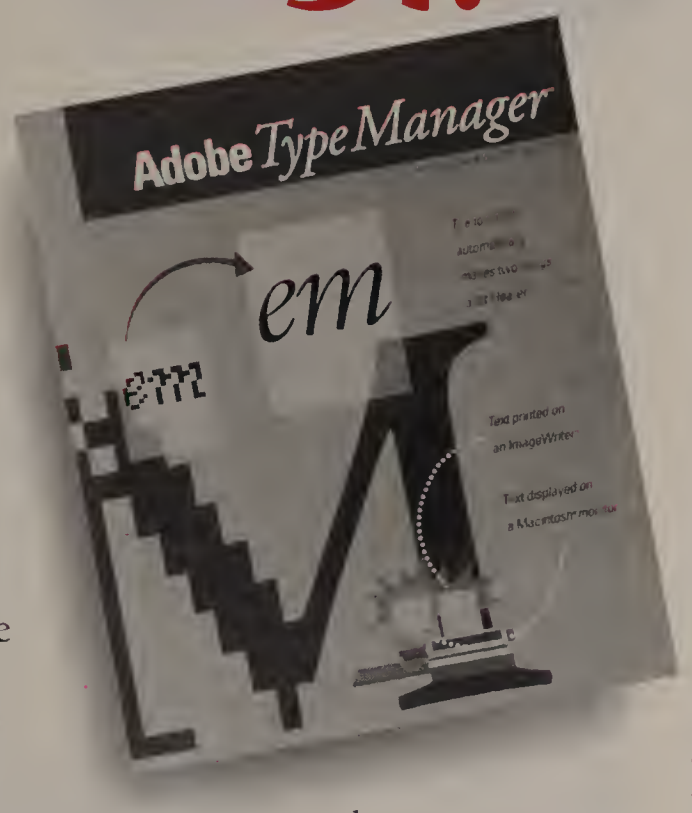
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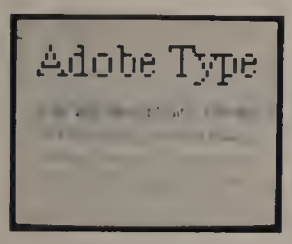
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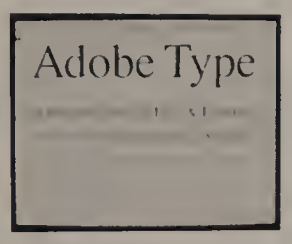
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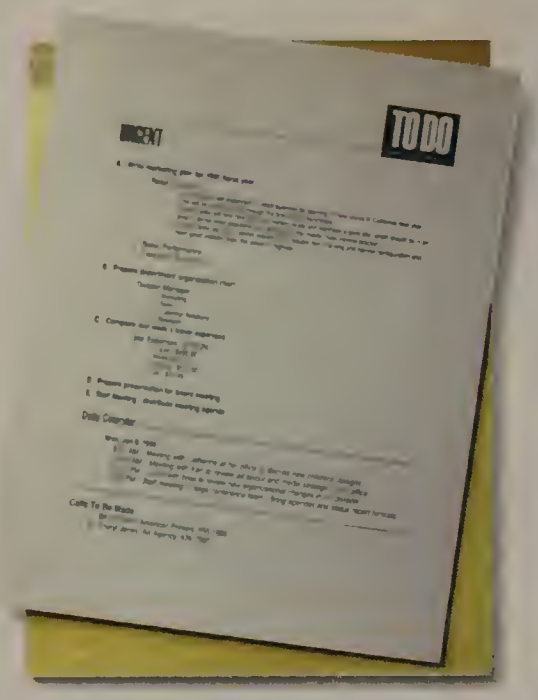
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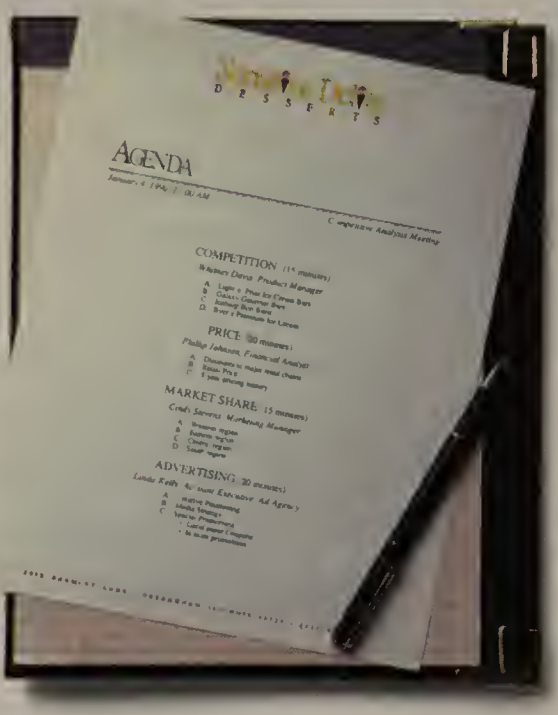
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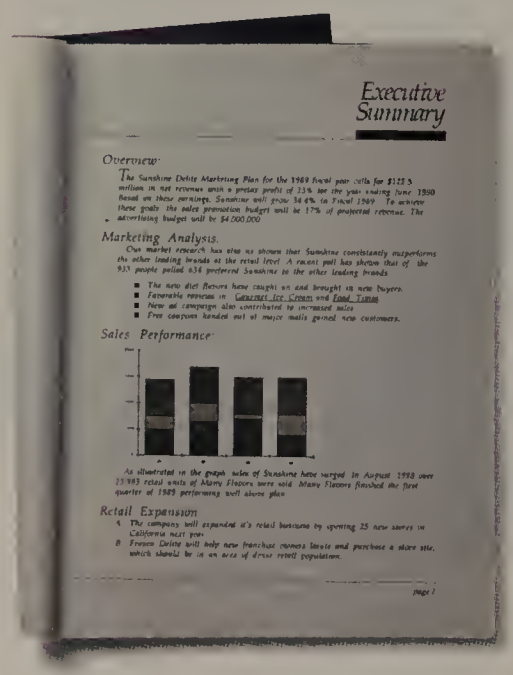
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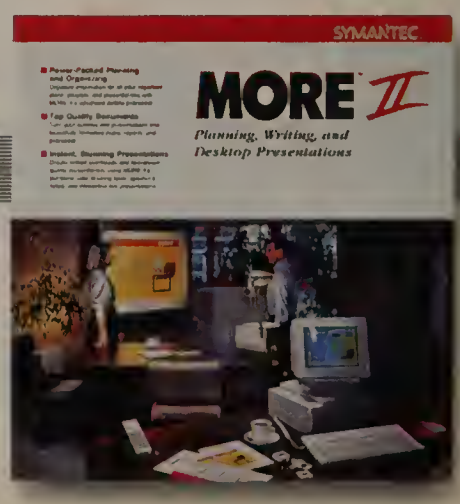
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Filling in the gaps

Touring an exhibit that commemorates Apple's lapses

by Thom Hogan

We're nearing the end of a year of dramatic change in the Macintosh world, a year in which Apple made a giant leap from the increasingly archaic performance of the 68000-equipped Plus and SE, to the high-performance color graphics world of the 68030-equipped Mac II.

Apple has delivered most of the major goodies it promised, and the next year will be a quieter one in terms of introductions. Sure, there'll be a few new machines, larger hard disks, some high-performance printers, and so on. But I don't expect any big changes or major surprise, and neither do most other Apple-followers I've talked to.

The obvious question, therefore, is what's still missing from Apple's new Macs and the (soon-to-be-released) new system software? Are there pieces of the puzzle Apple hasn't been able to solve? Are there gaps in the lineup? In a perfect world, what would we have now that Apple hasn't yet managed to provide us?

A lot, as it turns out. Just to list a few items in no particular order: color interface guidelines; any meaningful extension of HyperCard; Apple-sanctioned (read standardized) real-time video, 32-bit alphachannel definition, or NTSC frame grabbing; any sort of color output device other than a monitor; a protected mode for the operating system; and—my favorite lapse—truly integrated peripherals. Fortunately for you, I've been named curator of the Museum of Missing Macintoshanalia. This issue of *Macworld* entitles you to one free admission to the museum, so let's take a walk, shall we?



EXHIBIT A

Just inside the massive front doors you'll find a small exhibit dedicated to Macintosh software in need of upgrade or replacement. Right now the exhibit features Apple Computer exclusively, but we do someday expect to start a Claris wing.

The centerpiece of the software exhibit is, of course, HyperCard, which still awaits dozens of enhancements (color capability, selectable window size, multiple windows, a HyperTalk compiler, full built-in control of the Macintosh interface as opposed to using XCMDs, and much, much more). I've repeated the list of missing features here since it's difficult to read the fine print displayed by the computer—unfortunately the exhibit's stack was done for free by Apple employees using HyperCard on a Mac Plus. Half the HyperCard window is taken up by graphic elements donated by Apple, while the remainder of the screen is used to display the list itself in 9-point Geneva.

It also took us quite some time to get a printed, formatted report from the stack. HyperCard doesn't have any really useful report-formatting features yet. We're hoping that Bill Atkinson stops by some day to take a look at the exhibit and bring along an update, but we're not holding our breath. (Curiously, a little San Diego outfit *did* stop by the other day and showed us what we could do with our exhibit if we'd just transfer it to its SuperCard product.)

The empty binders on the left represent products we thought we'd be getting any day, but have yet to see. There are a few things in the System 7.0 binder now, but they're all labeled preliminary. There's a C++ binder and a binder for the new version of MacApp. You'll also find a binder with 27 versions of the only-recently-officially-released-ResEdit. The QuickDraw Professional Extensions binder (which should contain rotated text, halftone screens, and so on) is also empty. The big binder in the center of the display is for protected-mode additions to MultiFinder. Originally promised to appear in System 7.0 (Jean-Louis Gassée and Sculley didn't think our memory went back that far, did they?), these extensions are necessary to provide multitasking (à la UNIX and OS/2), but apparently won't appear until System 8.0.

So little has happened to CL/1 since Apple bought this remote database protocol, we considered adding it to a "what the hell" display. But because of Apple's

(continues)

recent announcements, we've moved it to the binders for System 7.0. That may not be a permanent home, however—we're waiting for more information from Apple about this one.

THE HARDWARE HALL

Moving on, we come to the bulk of the museum collection, the hardware exhibits. For some time, we thought that 32-bit QuickDraw was going to deserve just a brief mention in Hardware Hall, but as it turns out, there's ample opportunity to catalog Apple's omissions in this category.

Notice over here how we have a nicely done presentation on the so-called alpha channel. You see, 32-bit Color QuickDraw is really only 24-bit Color QuickDraw with 8 bits of spare change. Apple doesn't need any spare change, thank you, so it has thoughtfully donated this extra space to budding video companies. Unfortunately, it forgot to tell them what to use it for. A few companies are using it for controlling video overlays, others for controlling special effects. Someday, perhaps, the smartest of these manufacturers will get together and figure out a standard for the alpha channel. Until then, we'll keep adding new notions about what the alpha channel is for as they're discovered.

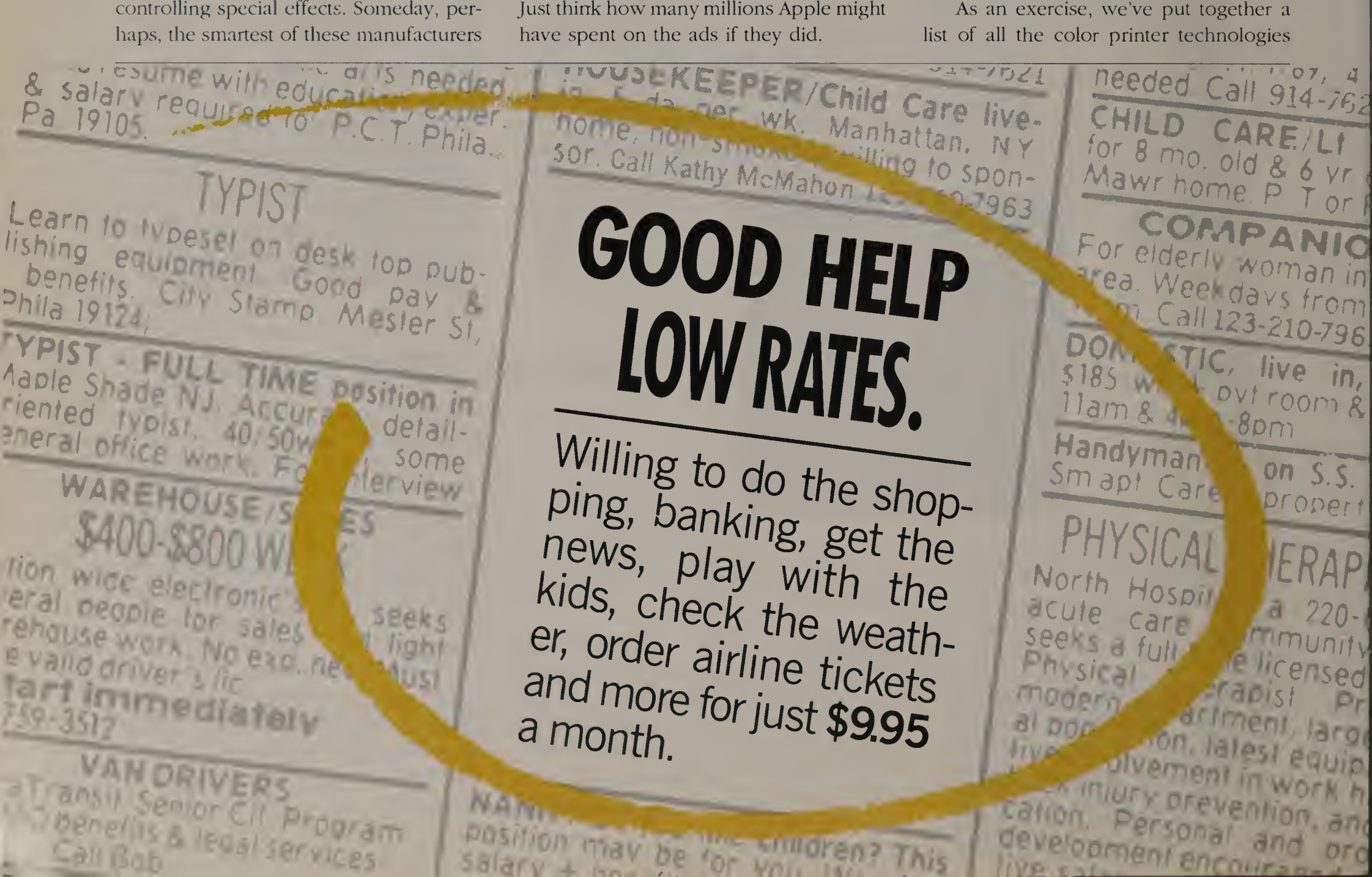
The 32-bit QuickDraw also goes alongside other missing video abilities. Apple's video interface cards are capable of NTSC output (which means you could record the Mac's display onto a video cassette recorder, for example), but Apple provided neither the connector nor the software driver to do so—and muttered privately something about legal liabilities if users fried their machines by doing something wrong. But failing to provide the software and connectors is really quite trivial compared to the bigger problem: Apple hasn't done anything about video at all.

On the left are storyboards from the Desktop Media campaign Apple spent millions of dollars on last year. See any mention of Apple-supplied real-time video, frame grabbing, SMPTE sync (a professional protocol), and so on? No, you don't. That's because Apple doesn't have them. Just think how many millions Apple might have spent on the ads if they did.

We were going to include a small space dedicated to Apple's missing color interface guidelines, but we found we didn't have room in this hall. (Apple's defense goes like this: we looked at what people were already doing with color and found that nobody did it the same, so we decided not to impose standards.) For an exhibit of related items, like the missing Kolor CDEV, the missing topics in the *Apple Human Interface Guidelines* book, and so forth, take a look at the missing-products binders in the software section we visited earlier.

Part of the point of using color video, of course, is getting copies of it into print. That's why you'll find our monument to the missing Apple color printer here in the color section. We have Gassée's famous quote about when Apple might produce a color printer ("just as soon as someone can meet our technical requirements and price point . . .") in big, bright letters for all to see—notice how we made the word *and* stick out by printing it in red?

As an exercise, we've put together a list of all the color printer technologies



currently available, a list of their originating manufacturers, and a list of all the color printer products that have been made from these underlying technologies. As you can see, the binder containing the lists is slightly bigger than the one that contains the Macintosh Programmer's Workshop stuff. In fact, you can even find Apple's name in the binder under the heading of investor for several companies. The one you're probably most likely to know is Mirus, but there are others.

In the meantime, if you'd like to take a sample of Apple's wonderful world of color with you, step over to the ImageWriter II and ask for a copy. The ribbon wears out quickly, so don't complain if your copy is a little dull and lifeless. We can't print it out on overhead materials or film due to the complexity of getting those items to feed correctly through the ImageWriter's mechanism, but we're working on it. Also, we're pretty much limited to a half-dozen colors. But notice how we did get the red into Gassée's quote and into the faces of all the expectant Mac II owners.

PERIPHERALLY SPEAKING

My favorite part of the museum is our newest exhibit: The Missing Truly Integrated Peripheral. If you've got a Macintosh in your office, take a good, hard look at it. Now look carefully at the things you've got connected to it. In my office there's a fax modem, a regular modem, a scanner, a laser printer, some extra drives, a connected IBM PC, and a host of other goodies. Let's just concentrate on the first four. Besides the fact that they all connect to the Mac, is there anything else you can see that makes them alike?

You bet there is: each contains a processor, lots of memory, and some dedicated I/O. And of course, each has a power supply, a case, and connects with cables. Now, let's put our thinking caps on: what if we put one processor, lots of memory, modem I/O, and a power supply into one box with a laser printer engine and a scanner engine? Why, we'd have an office copier, a fax machine, and a plain-paper PostScript printer all in one box. That's exactly one cable to connect to the Mac and one box to take up desk space.

Now, let's compare that to what Apple has given us so far: separate printer, modem, fax modem, and scanner. Can you connect all of these items at once to your machine? No, the Mac has only two serial ports. Are you paying for unnecessary components? You bet you are, since each of these devices has a CPU, ROM, RAM, power supply, case, and I/O processors. Will putting each of these things into a single box make it so that you can't use multiple items simultaneously? Sort of, but it's rare that a user needs to print something and modem something else simultaneously. This single box—I like to call it Skippy—would look like anything else on the LocalTalk network. If it were busy receiving and printing an incoming fax, attempting to print would get you the message "Skippy busy." If you use MultiFinder and its background printing, you wouldn't even see this message unless you pulled up the Print Monitor.

This is not to say that Apple shouldn't still build separate components. Some Mac users do not need faxes or scanners, *(continues)*



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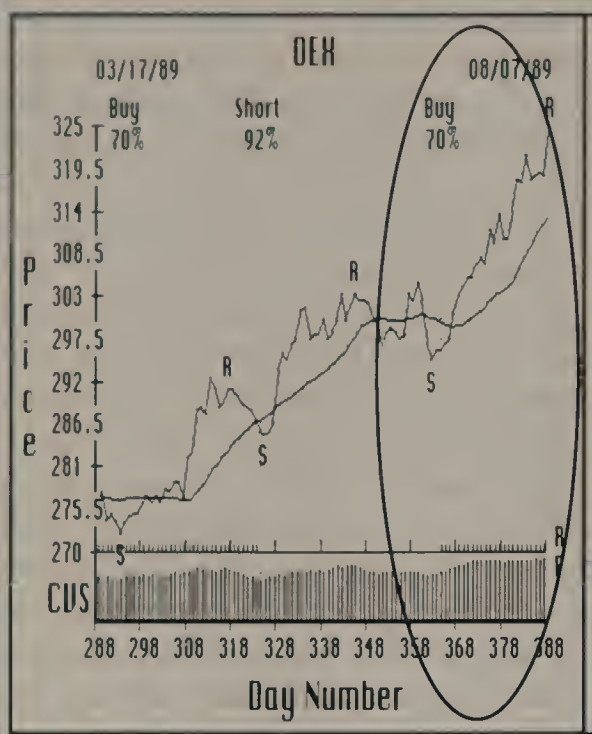
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366	07/06/89	Thr		Hold	$297.59	0.45	---	Rising
367	07/07/89	Fri		Hold	$300.79	3.20	---	Rising
368	07/10/89	Mon		Hold	$302.88	2.09	---	Rising
369	07/11/89	Tue		Hold	$304.41	1.53	---	Rising
370	07/12/89	Wed		Hold	$305.48	1.07	---	Rising
371	07/13/89	Thr		Hold	$305.49	0.01	---	Rising
372	07/14/89	Fri		Hold	$307.18	1.69	---	Rising
373	07/17/89	Mon		Hold	$307.91	0.73	---	Rising
374	07/18/89	Tue		Hold	$306.91	-1.00	---	Rising
375	07/19/89	Wed		Hold	$311.61	4.70	---	Rising
376	07/20/89	Thr		Hold	$310.08	-1.53	---	Rising
377	07/21/89	Fri		Hold	$313.46	3.38	---	Rising
378	07/24/89	Mon		Hold	$310.49	-2.97	---	Rising
379	07/25/89	Tue		Hold	$310.16	-0.33	---	Rising
380	07/26/89	Wed		Hold	$313.96	3.80	---	Rising
381	07/27/89	Thr		Hold	$318.09	4.13	---	Rising
382	07/28/89	Fri		Hold	$317.66	-0.43	---	Rising
383	07/31/89	Mon		Hold	$321.44	3.78	---	Rising
384	08/01/89	Tue		Hold	$317.93	-3.51	---	Rising
385	08/02/89	Wed		Hold	$318.77	0.84	---	Rising
386	08/03/89	Thr		Hold	$318.89	0.12	---	Rising
387	08/04/89	Fri		Hold	$318.65	-0.24	---	Rising
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and so should not have to pay for them. But imagine the flexibility of the ultimate Macintosh peripheral: you could buy the base unit as a printer, and then add scanning, fax, and communications facilities as needed.

The question most people ask when they see this exhibit is, Why should we expect Apple to come up with a Skippy workalike? The answer is quite simple. To date, Apple has provided state-of-the-art personal computing solutions. Skippy is state-of-the-art. Apple is dedicated to keeping its machines' impact on the desktop to a minimum (thus the small, narrow classic Mac and the highly compact IIcx). Skippy certainly falls into the category of desktop-clutter reduction. And Apple is highly involved in proprietary technology. Generic scanners and faxes are not proprietary in any manner of speaking. Skippy would require proprietary technology, both to control it internally (Skippy's start-up ROM) and to handle the data transfers between it and the Mac it is connected to (perhaps an extension to LocalTalk). In short, Skippy fits all of Apple's requirements for a new product.

Indeed, many of us feel Skippy is an absolute necessity. That's why we hope to put reprints of this article here in The Missing Truly Integrated Peripheral exhibit, so that you can scribble the words "I want a Skippy" in red at the top and send it to your favorite Apple employee.

In fact, if this museum ever stops expanding, it will be because users have forced Apple to produce some of the products referred to here. That's fine by me. I certainly have enough to do without running this museum as well. Even as I write this, I hear from my contacts at Apple that I need to make room for "the laptops that never were" and several other important exhibits. So, if you've seen—or not seen—something here you like, be sure to let Apple know. After all, we'd love to go out of business.

Thom Hogan is president of Macreations, a Macintosh software developer; publisher of The Macintosh II Report; *and author of* Programmer's Macintosh Sourcebook *(Microsoft Press, 1989).*

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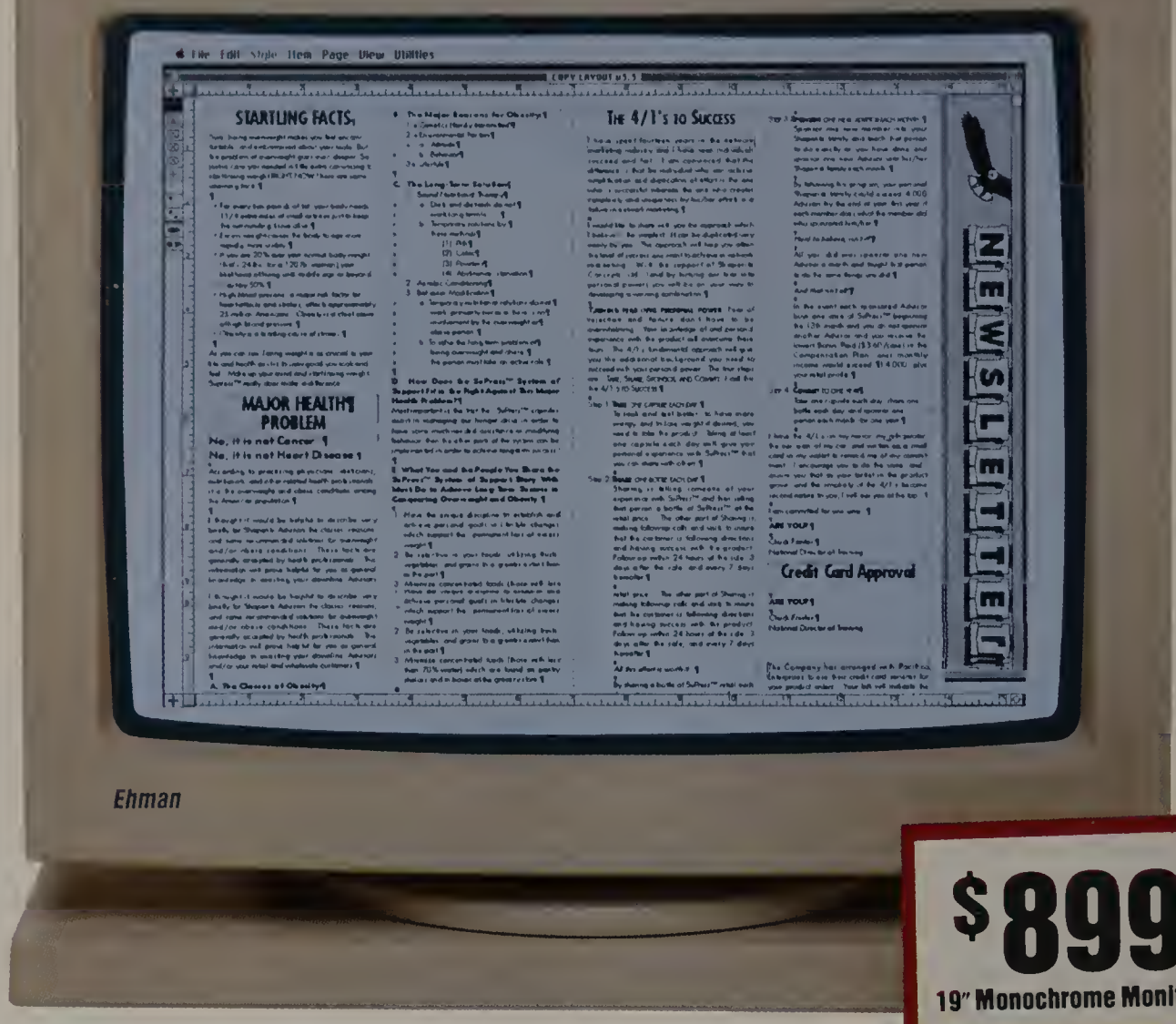
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The Ehman monitor matches all the major features of other big screen monitors costing twice as much, including a high resolution of 76 DPI, and a flicker-free refresh rate of 70 herz.

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It's the big-screen monitor you've been hoping for. So stop waiting for prices to come down. At Ehman they already have.

Ehman

1-800-257-1666

All product names mentioned are trademarks of their respective holders. Prices subject to change without notice.

Circle 154 on reader service card

MACWORLD NEWS

by Dan Littman and Tom Moran

Adobe Readies Type Manager

At press time, Adobe planned to go ahead with its PostScript screen font–generating utility Adobe Type Manager (ATM), even as sudden changes in the font market eroded much of Adobe's foundation.

Apple and Microsoft recently announced a technology swap to provide Apple with a non-Adobe PostScript clone, which Apple could use in the LaserWriter, and to provide Microsoft with Apple's font technology for use in OS/2 for IBM computers. The loss of the Mac and OS/2 markets throws the future of Adobe's PostScript into question, but ATM remains an inexpensive way to extend the usefulness of Adobe fonts.

ATM, which costs $99, intercepts the Mac's instructions to draw fonts on the screen and renders them directly from PostScript information in the downloadable fonts. With ATM installed, the Mac displays fonts exactly, at any size, without jaggies or distortion, and sends accurate PostScript renderings to non-PostScript printers such as ImageWriters and the Apple LaserWriter IISC. ATM works only with Adobe Type 1–compatible fonts, which include fonts from Linotype, Monotype, Agfa Compugraphic, Autologic, Varityper, and Adobe; ATM does not support fonts developed with PostScript clones, such as Bitstream's fonts, or fonts designed with Fontographer. However, since Adobe has announced plans to release the formerly secret *hinting* information (the special rules for drawing curves), fonts developed with PostScript clones may be upgraded to work with ATM.



Adobe Type Manager reads your PostScript printer fonts and displays them on screen.

ATM requires a Mac Plus or better machine and does not support non-roman typefaces. It also requires that at least one size of the QuickDraw-based screen font be installed, and ATM requires that the PostScript-based downloadable font be resident on the Mac, even for LaserWriter IINTX users. Most PostScript laser printers for Macs have a set of 35 resident fonts that users normally don't install on their Macs, so Adobe is selling downloadable versions of the 35 fonts with a copy of ATM for $198. Adobe head John Warnock claims ATM is faster than QuickDraw and will not slow down type rendering. For more information, contact Adobe in Mountain View, California, at 415/961-4400.
— *Dan Littman*

Apple Offers Rebates, Trial of Hardware and Software

In what is probably the company's biggest promotion to date, Apple Computer will offer qualified customers free tryouts of Apple systems and peripherals and will give rebates to those who buy both systems and peripherals between October 14 and December 31, 1989. Apple

(continues)



The soaring prices of video cards can keep you from getting the highest graphics performance from your Macintosh®.

That's why at Micron, we've brought the high price of brilliant color and outstanding resolution down to earth with our Xceed™ video cards. Now you can exceed the graphics limits of your Macintosh II, IIx, IIcx or SE/30 without exceeding your budget.

Xceed video cards give you all the performance features you expect such as 1, 2, 4 and 8 bits per pixel, 256 simultaneous colors from a palette of more than 16 million, 640 × 480 or 1024 × 768 resolutions and full Macintosh software compatibility. Plus we include 8/24-bit MacroPaint™ software and a gamma color correction desk accessory — a package worth $149.00 — absolutely free!

In fact, the only feature we don't offer is the high price tag.

And like all Micron memory products, Xceed video cards are supported by our comprehensive customer service program and toll-free hotline.

So call us today at 1-800-642-7661 for the name of your nearest Micron dealer. And enjoy brilliant color graphics without the high flying price.

Micron. Working to improve your memory.



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Circle 161 on reader service card

has also arranged for an impressive list of software companies to offer free trials of their Mac software.

Those who want a free trial of a system first have to qualify for Apple financing, and then pick up the system from the dealer between October 14 and December 31. Those who decide not to keep the equipment must return it between January 1 and January 15, 1990.

Customers who make an outright purchase of a selected system between October 14 and December 31 will receive a rebate on qualified peripherals. For example, if you bought a Mac Plus and a qualified Apple peripheral, you would send in a rebate form and later receive a check for $200. The rebate for an SE is $250, for an SE/30 it's $250, and for a IIcx it's $300. Peripherals that qualify for the rebate plan include the ImageWriter II and LQ; the LaserWriter IISC, NT, and NTX; 2MB and 4MB RAM upgrades; the HD/20 hard disk; the Apple CD ROM; the Apple Scanner; and the Personal Modem. Rebates add up if you buy more than one system, so if your company bought ten IIcx systems, it would receive a $3000 rebate on one or more peripherals. Those who opt for the free trial do not qualify for a rebate unless they buy before December 31, and then the rebate is limited to $100 per system, regardless of which model it is.

Software companies that have agreed to offer free trials of their software—only with a trial computer under Apple's plan—include Microsoft, Claris, Aldus, Acius, Ashton-Tate, Symantec, Informix, Mediagenic, SoftView, VersaCAD, T/Maker, Fox, Great Plains, Intuit, MacroMind, Oracle, WordPerfect, and Intergraph, among others. Apple said it will provide stickers to dealers to identify the software packages included in the promotion. It's important to note that you must return the system in order to return the software.

Apple is also including the Apple IIGS in the free trial and the rebate promotions. Apple will pay all interest on financing for the trial systems until February 15. For more information, contact your local Apple dealer.
—*Tom Moran*



PIERRE-YVES GOAVEC

NEC's CDR-35 is a portable CD ROM player that weighs less than 3 pounds when detached from its base unit.

Portable CD ROM Reader Weighs Less Than 3 Pounds

A CD ROM reader that weighs a mere 2.2 pounds was introduced in early November by NEC Home Electronics. When powered by an optional NiCad battery pack for use as a portable device, the CDR-35 and battery together weigh just under 3 pounds.

The CDR-35 will work with the Macintosh or with IBM PC and PS/2 compatibles. A $99 interface kit with software and cable is required for the Mac, while the interface kit for the IBM-compatible systems will go for $199. The CDR-35 unit itself will carry a suggested retail price of $599.

The CDR-35's portability and price do not come without a trade-off, however. The reader's average access time is stated by NEC as 1500 milliseconds, better known to most humans as 1.5 seconds—considerably slower than usual. The data-transfer rate is 150K per second.

The CDR-35 can read either 3-inch or 5-inch CD ROMs, and can also play standard audio CD disks. The device has a capacity of 540MB on a 5-inch disk, or 180MB on a 3-inch disk. The unit can operate from the battery for 90 minutes of continuous use or 2 to 4 hours of intermittent use. After 5 minutes of nonuse, the player automatically stops spinning the disk to conserve power. The NiCad battery takes 15 hours to recharge.

The CDR-35 for the Mac was slated to ship in November or early December. For more information, call NEC in Wood Dale, Illinois, at 800/366-3632. —*T. M.*

Play It Again, Scott

Though RagTime has been successful in Europe, bad support and weak distribution channels have given the integrated page-layout package a less-than-friendly welcome in this country. Now RagTime is back in feature-packed version 3.0, and with new distributors.

The new version adds a completely new charting and graphing module to the spreadsheet, word processor, and page layout of earlier versions. Graph types include 2-D and 2½-D pie charts, line graphs, and several types of bar and area graphs; and multiple data sets can be displayed as overlays. Graphs are tied to spreadsheet frames that can be displayed or hidden away on other pages; text frames can also incorporate numbers directly from a spreadsheet, and changing the spreadsheet updates numbers in both graphs and text. The spreadsheet frames, with a maximum size of 16,000 rows by 253 columns, can now be pipelined like text frames, so that if you fill or shrink a spreadsheet frame the numbers in it can over-

(continues)



No Mac is an island.

Especially if you're hooked up with a copy of WordPerfect®.

Because with WordPerfect, the Mac not only stands alone, but works as part of a greater business team.

Macintosh, MS DOS, VAX, DG, and UNIX systems are all trying to connect. And WordPerfect offers more common ground than any other word processor.

Through your network, WordPerfect makes it easier to use the same document on different machines. That's because WordPerfect shares compatible file formats on these different systems.

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And because the WordPerfect commands and functions are similar from one computer to another, you'll feel comfortable using WordPerfect no matter what system you're on.

So if you need to share your work, putting WordPerfect on your Macintosh is a smart decision. Because with WordPerfect, you'll never work alone again.

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Circle 126 on reader service card

OWN A MODEM?

LAST CHANCE! MUST RESPOND BY 12/31/89

Test a New Macintosh Online Service for Free

If you own a Macintosh® computer and a modem, we invite you to participate in a **nationwide test of a new online service** designed especially for Macintosh computer owners.

We'll give you everything you need to access the service, including special Mac-specific telecommunications software and free usage time so you can test the service. All we ask is that after you use the service, you take some time to tell us what you think.

This revolutionary, soon-to-be-announced online service features:

- A technically sophisticated, yet easy-to-use, Macintosh interface.
- Fast, intuitive navigation through use of graphic icons and pull-down menus.
- Software libraries full of Macintosh programs, and a full range of services designed especially for Macintosh computer owners.

Join us in this exciting opportunity — simply complete and mail the application form below.

(Detach and mail today.)

APPLICATION FOR PARTICIPATION

ONLINE SERVICE TEST

Name: _____ Home Address: _____

City, State, Zip: _____ Phone *: _____

1. Brand of your computer:
- ☐ Macintosh 512 or 512e
- ☐ Macintosh Plus
- ☐ Macintosh SE or SE30
- ☐ Macintosh II
- ☐ Other (please specify) _____

2. National online services you are *aware* of:
- ☐ AppleLink—Personal Edition
- ☐ CompuServe
- ☐ Dow Jones News Retrieval
- ☐ GEnie
- ☐ MacNet
- ☐ Prodigy
- ☐ Other (please specify) _____

3. National online services you *have used:*
- ☐ AppleLink—Personal Edition
- ☐ CompuServe
- ☐ Dow Jones News Retrieval
- ☐ GEnie
- ☐ MacNet
- ☐ Prodigy
- ☐ Other (please specify) _____

4. Type of modem you own:
- ☐ 300 baud
- ☐ 1200 baud
- ☐ 2400 baud
- ☐ 9600 baud

5. Your primary use of online services (please check only one):
- ☐ Downloading software
- ☐ Computer support
- ☐ Information Services
- ☐ Electronic mail
- ☐ Business
- ☐ Entertainment/Hobby
- ☐ Chat

6. Who typically pays the bill for your use of online services?
- ☐ I do (personal use)
- ☐ Organization I work for (business use)

Quantities are limited. Offer expires December 31, 1989 5177

LAST CHANCE
FOR
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ATTENTION: MODEM OWNERS

Help us test a new online service designed especially for Macintosh computers.

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flow into another frame. Another nice touch is the addition of complete text-formatting controls for spreadsheet frames, greatly improving the appearance of tables and forms. Text in spreadsheet cells can also be searched by content and attribute just as in text frames, and type-formatting macros act as style sheets.

RagTime 3.0 supports 24-bit color and can drive a scanner. The program lets you adjust color in RGB, CMYK, and HSB formats, and the developers plan to add Pantone support and color-separation capability.

Ragtime 3.0 takes up 1.2MB of disk space, requiring a hard disk, and under MultiFinder it asks for 1600K of memory. The program lists for $595. The color separator, which may not be ready yet, will retail for $100. Version 3.1 will add hooks to Mainstay's unreleased text-archiving system code-named Marco Polo. For more information, contact Migrant Software in Narberth, Pennsylvania at 215/667-9781.— *D.L.*

Perception's Greatest Hits

In 1973, the Swedish psychologist Gunnar Johannson attached small lights to people dressed in black body suits and filmed them walking, dancing, and exercising against a black background. The films revealed no human shapes, only the small points of light attached to wrists, elbows, ankles, knees, hips, and shoulders. Nevertheless, film viewers perceived people in motion, walking and dancing and so forth. They even distinguished one person from another as the points of light mingled. Abstract, dynamic structures, Johannson suggested, were all the mind needed to recognize people and other biological forms.

This is only one of the groundbreaking perception studies included in The Active Eye Stack, a HyperCard stack of 50 animations exploring how the mind sees and structures the world. New York University professors Michael Mills and William Schiff created this stack because they were tired of using static, flat media—the printed page and the chalkboard—to illustrate how we perceive dynamic three-dimensional objects in time. By combining HyperCard, VideoWorks II, digitized video, scanned images, and text, they created an elegantly organized interactive stack that is fun even for those without the time or inclination to study the science of perception seriously. Apple was so impressed by the stack that it invited Mills, who is on leave from NYU, to work on interface design at Apple.

The Active Eye Stack shows how multimedia is coming of age. Most earlier projects have been largely exercises in exploring multimedia techniques, but this project uses multimedia to explore a particular subject. Though designed primarily for teaching psychology at universities, this stack will also be of interest to students of visual art, graphic design, architecture, computer graphics, and machine vision.

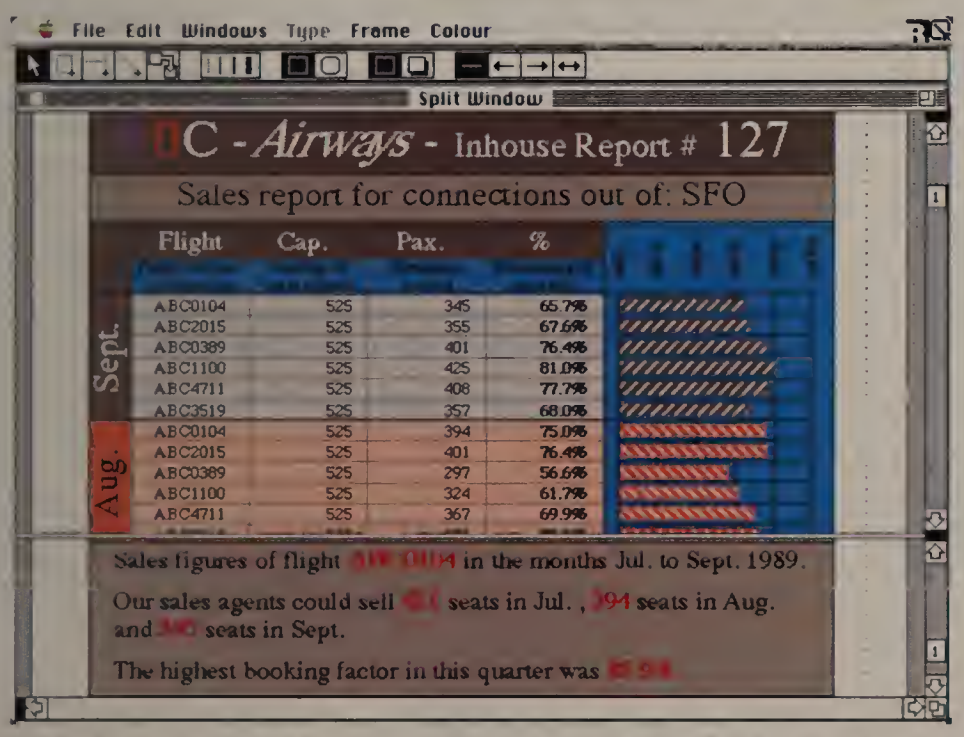


MICHAEL LEWELLYN

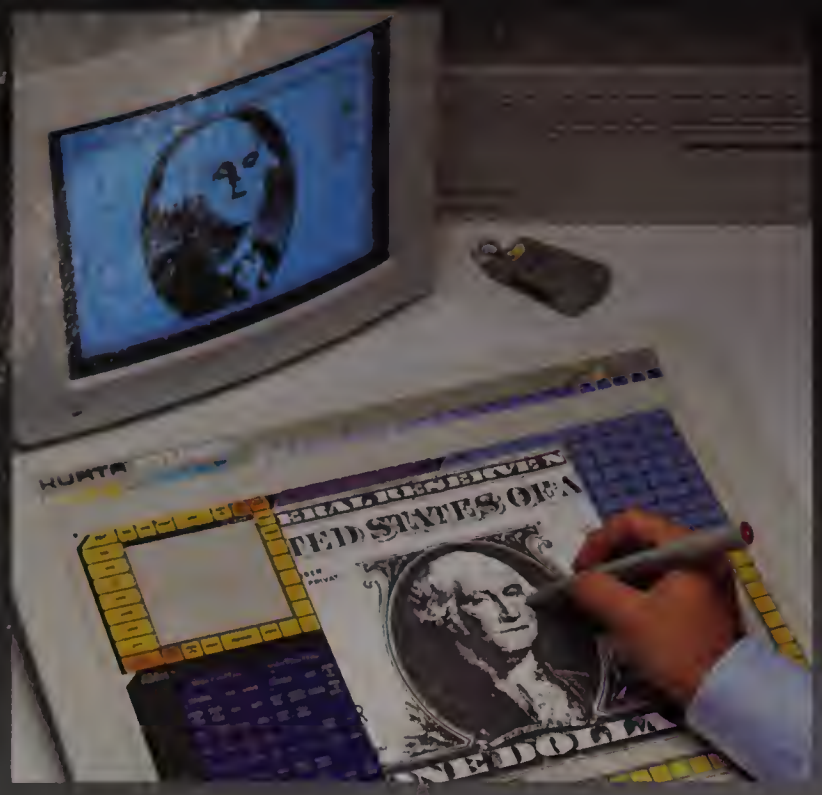
Psychologist Michael Mills combined HyperCard and VideoWorks to animate tools for studying perception of motion.

The 6-disk set requires 2MB of RAM, HyperCard, and a hard disk. The set costs $99, including a 150-page guidebook. Educational site licenses are $750 for 30 sets of disks and 10 guidebooks. A free 10-minute video sampler is also available. For further information, contact Lawrence Erlbaum Associates in Hillsdale, New Jersey, at 201/666-4110. —*Ann Garrison*

(continues)



With character-level formatting in spreadsheet cells, RagTime 3.0 lets you really fine-tune the look of your tables.



PageMaker®, FreeHand®, and Persuasion® just got easier to use and faster than ever.

Now you can have page layout, freehand drawing, and presentation graphics capabilities in one studio, the Kurta Studio.™ Take the menus and two-handed keyboard commands out of your creative environment. The new Kurta Studio for Aldus® products brings all the power of three of the most popular graphics programs right to your fingertips. Access all your tools, typefaces, or menu commands in PageMaker, FreeHand, and Persuasion, through one intuitive, easy to use interface.

User friendly.

The Kurta Studio template is designed to follow the Aldus screen menus making all commands easily accessible to even the casual user. The preprogrammed template incorporates Aldus' most commonly used commands, so you don't have to revert to the keyboard for shortcuts. The Kurta Studio even lets you program your own custom routines right on the template.

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Every detail of your creativity has been tended to including:

- Cordless 3-switch pen, 4-button cursor, and corded 2-switch pen, for your freedom of expression.
- Large 12" x 17" worksurface with programmable function keys.
- Custom template for Aldus software to save you hundreds of keystrokes.
- Zip area for quick and easy cursor movement.
- Drawing area for freehand sketching and tracing.
- Free Quickeys® Software V2.1 for creating your own custom command sequences.
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If it's time to get back to creating, it's time to let Kurta work for you.

Call now to get yours.

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Kurta works.

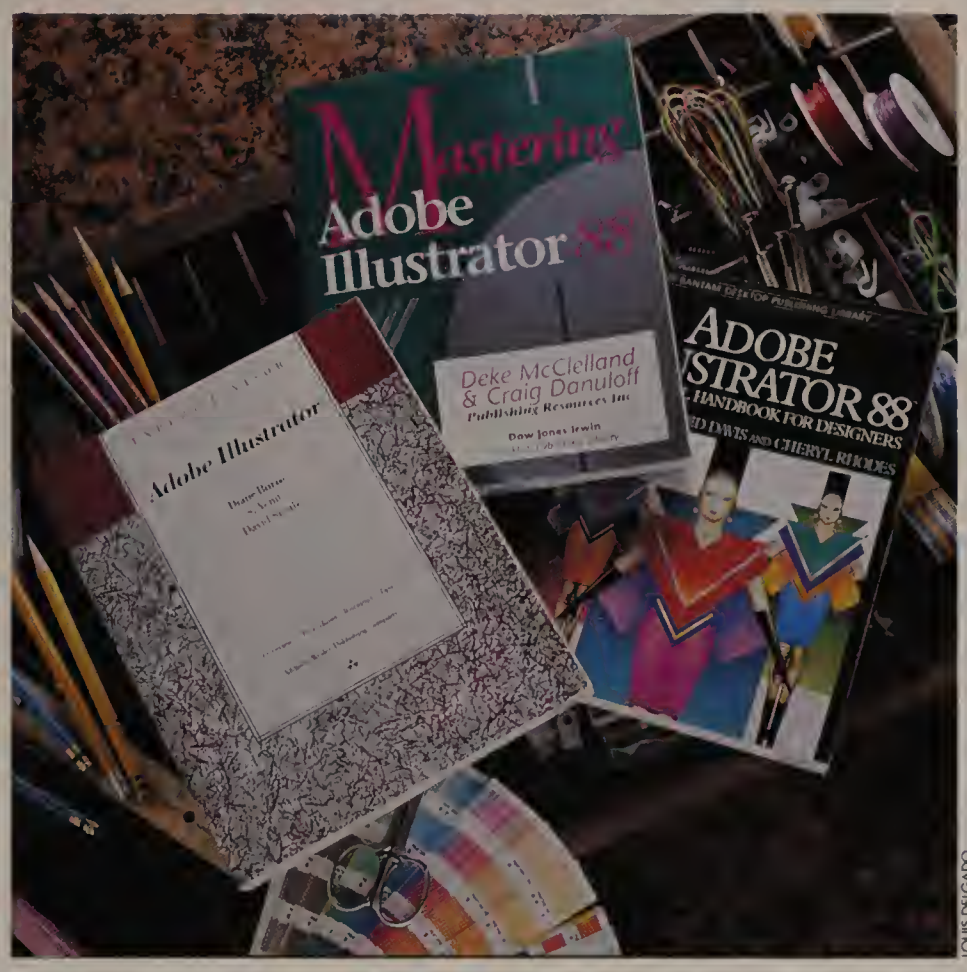
Illustrator 88: The Books

Adobe Illustrator 88 comes in a hefty package that contains a training video, a tutorial disk and manual, a user guide, and a color guide. With all those references, do you also need a 300-page book to help you learn the program? If you want to benefit from the tips of artists and designers who know the program inside out, the answer is yes.

To date there are three books that promise to take up where Adobe's documentation leaves off: *Adobe Illustrator 88: The Official Handbook for Designers*, by desktop publishing gurus Tony Bove, Fred Davis, and Cheryl Rhodes (Bantam Computer Books, $24.95); *Expert Advisor: Adobe Illustrator,* by Diane Burns, S. Venit, and David Smith (Addison-Wesley, $22.95); and *Mastering Adobe Illustrator 88*, by Deke McClelland and Craig Danuloff (Dow Jones-Irwin, $24.95).

Adobe Illustrator 88 is compactly organized into six chapters. Chapter 1 is an introduction to Illustrator's basic features; Chapters 2 through 4 provide step-by-step descriptions of how professional artists created various types of illustrations, from charts and maps, to decorative and commercial graphics. Chapter 5 describes the program's tools and commands in detail, while Chapter 6 is an introduction to PostScript programming. The book is well organized; is written in a straightforward, friendly style; and contains numerous helpful tips and examples. My only complaint is that it lacks a glossary.

Expert Advisor is divided into four sections. Part I, which describes the program's tools, starts right in with useful tips (for example, when describing the Blend tool, the authors advise "When printing to a 300-dpi laser printer, 25 blends are usually adequate for creating a gradual transition from white to black"). Part II describes each menu command, again offering tips or warnings where appropriate. Part III is the first step-by-step section; it gives clear, well-illustrated instructions on doing everything from drawing a five-pointed star to creating patterns, masks, and text effects. Part IV provides step-by-step descriptions of nine drawings created by professional artists. The book also contains an appendix that describes the DrawOver utility, another that deals with Adobe Separator, a glossary, and a quick reference guide. *Expert Advisor* lives up to its name; as an intermediate Illustrator user, I learned many tricks that weren't covered in Adobe's copious documentation.



Three new books on Adobe Illustrator 88 are designed to supplement Adobe's documentation. They range from beginner level to advanced instruction.

Mastering Adobe Illustrator consists of 16 chapters, an appendix that introduces PostScript, and a glossary. While 16 chapters sounds like a lot, the first 8 chapters are pretty elementary stuff; I didn't find much in these chapters that wasn't covered in the program's documentation. In Chapter 9 the book starts in on a fairly complex illustration, but even this and subsequent chapters don't have much information for experts (to its credit, the book does have some tips not found in Adobe's manuals). Although the book is competently written, its cluttered layout doesn't enhance the authors' credibility as design experts.

Of the three books, *Expert Advisor: Adobe Illustrator* was my favorite, followed closely by *Adobe Illustrator 88: The Official Handbook for Designers. Mastering Adobe Illustrator 88* might prove a good supplement for beginners, but it pales in comparison to the other two books.
—Erfert Fenton

Barco, Radius Introduce Color Calibrators

With more concern focusing on matching colors precisely, both Radius and Barco Industries have devised color-calibration techniques for their monitors.

Barco has introduced Mac interface software for its Calibrator, a high-end monitor with calibration capability for applications where color accuracy is essential. The Calibrator uses an external fiber-optic sensor that attaches to the screen with a suction cup. The unit's internal electronics allow a wide variety of settings, including color temperature, geometry, brightness, and picture level. The Calibrator is also designed to have the same sharpness in the corners of its screen as in the center, according to Barco.

The Mac interface software, a desk accessory called Calibrator Talk, lets the Calibrator intelligent monitor work with a Mac II series computer in native Mac
(continues)

How do you explain the magnitude of Microsoft Works?

Whether you run a small business or your knowledge about computers happens to be less than monumental, Microsoft® Works 2.0 has you covered.

Microsoft Works 2.0 is actually five tools in one: word processing, spreadsheet, database, drawing and communications. But as far as you're concerned, it's one integrated program—so it's easy to move between the different productivity tools and use them together.



You get five programs in one—and incredible efficiency when you combine their talents.

In fact, from the moment you take it out of the box, Microsoft Works 2.0 is easy to use. It comes with an animated training program written in HyperCard® format. As well as on-line help and unlimited phone support to help answer any questions you may have about Works' features.

No matter how varied your projects are, Microsoft Works 2.0 can handle the job. Its newest feature, the drawing module (with page layout), can take an otherwise dull, fact-filled document and turn it into one full of compelling graphics.

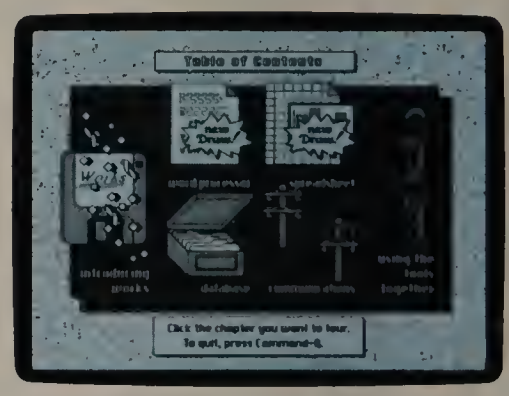
The word processor can create everything from a simple memo to a detailed report—and it even includes a spell-checker aimed at eliminating typos.

Of course, if your document needs to be supported with numbers, you can always jump over to the spreadsheet to compute and analyze data. And then transform it all into easy-to-read, easy-to-understand charts.

As for information that keeps your business going, the database is indispensable for keeping track of clients and orders.

And you can count on the communications module to bring information to your desktop through a modem.

If you'd like to learn more about Microsoft Works 2.0, just call (800) 541-1261, Dept. I76 for the name of your nearest dealer.



To help get you started, we've included an animated training program written in HyperCard format.

No wonder Microsoft Works 2.0 is the best selling application in its class. Aside from being a great value, Microsoft Works 2.0 is one program that can handle a myriad of business needs.

It's that simple.

Microsoft
Making it all make sense.

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It's simple.

HOME FRONT

MARTIN REALTY

Real Estate News for the Greater Aspen Community - Published by Martin Realty

Lowest Lending Rates Since 1983!

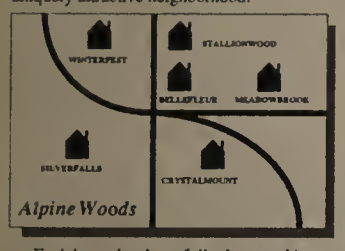
Last week mortgage interest rates reached a five-year all-time low. First Mortgage offered a 30-year, 95 percent new home loan at 8.5 percent with no points. Unheard of in recent years.

Resale of homes has jumped 13 percent over sales recorded during the same period last year.

New Home sales are up 17 percent. Several local lenders have put together special new home financing packages in cooperation with local contractors. Call our Aspen office at (426) 838-2961 for details.

Crown Construction Opens This Year's Alpine Woods Development

The Alpine Woods development will be open for public tours from July 15 until August 21. Each home represents a distinct style from contemporary to French provincial —all homogeneously placed to create a uniquely attractive neighborhood.

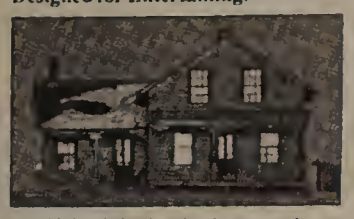


Each home has been fully decorated by a local interior design firm and each is singular. Whether you're just shopping for ideas, we recommend this year's Alpine Woods development.

You can park at the Denny Shopping Center and take a tour bus from there between 9:00 a.m. and 6:00 p.m. daily.

HOME OF THE MONTH

Lakefront Country House: Designed for Entertaining!



This lovely brick and cedar country house can be found just fifteen-minutes from downtown Aspen. Nestled in giant firs, it represents true Colorado style!

The master bedroom suite features a panoramic view of Lake Diamond. The master suite also has his-and-hers walk-in closets, a separate vanity, and a stunning shower area made of glass bricks.

The living room, study, family room, and bedrooms (2+) feature hand-polished redwood panelling and skylights.

The three-car garage has special wall-mounted ski racks and an extra-sized third stall to accommodate up to a 24-foot boat.

Two additional baths, a stone fireplace, 800 square feet of decking, three wooded acres, and a private dock complete this rural dream home.

MARTIN REALTY

July 28, 1988

Gary and Lisa Elliot
533 4th Street
Denver, CO 54556

Dear Gary and Lisa,

This Saturday, I look forward to showing you a few of the quality homes in the Aspen community.

Per our phone conversations, we will be looking at family homes with a minimum of four bedrooms, two-and-a-half baths, a family room, and a three-car garage. It sounds like you are a pretty active family, so I've also chosen homes with a "mud room" for changing wet boots, etc.

One issue that we haven't really discussed is schools. Before Saturday, you might want to jot down a few priorities. Public, private, parochial? Level needed--from pre-school to college. And any special needs your children may have, like proximity to an indoor pool or gym.

I can also put you in touch with any youth organizations you may be interested in like The Boy Scouts or 4-H. We have it all.

You mentioned wanting a fairly good-sized lot. Does this mean that you will need stables or a barn? I can even put you in touch with a local riding stable if you wish.

Since you plan to be here for the whole weekend, let me know if I can be of any help with hotel reservations or activites. I can arrange for anything from theatre tickets to a riding lesson. Whatever might make your stay more pleasant, and leave a good impression of Aspen.

It's a beautiful place and we're happy that you've decided to make it your home.

Sincerely,

Peter Cohen
Residential Agent

cc:file



The Horvath Family
445 28th Street
St. Louis, MO 88990

David Doyle
6767 Diamond Place
Aspen, CO 54555

The Stefls
14 Lamplighter Lane
Ridgefield, VT 29333

The Horvath Family
445 28th Street
St. Louis, MO 88990

David Doyle
6767 Diamond Place
Aspen, CO 54555

The Stefls
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The Horvath Family
445 28th Street
St. Louis, MO 88990

David Doyle
6767 Diamond Place
Aspen, CO 54555

Greg Voornas
1013 Scott Road
Boston, MA 31222

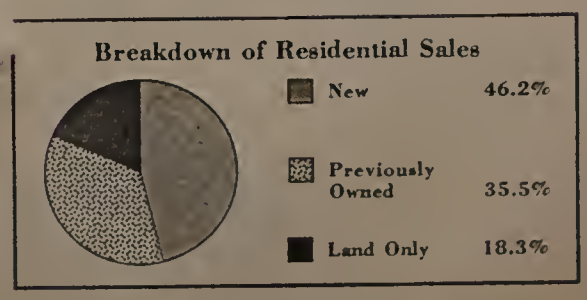
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Salin-

Gary and Lisa Elliot
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Denver, CO 54556

...ner
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Santa Cruz, CA 66667

COMMISSIONED SALES REPORT—JUNE

Sales Person	Type	Rate	Sales YTD	Billings	Check Amt.
Shannon Pitts	Commercial	3.80%	$275,000	$88,000	$3344.00
Lisa Doan	Residential	3.00%	$320,000	$120,000	$3600.00
Peter Cohen	Residential	3.00%	$230,000	$100,000	$3000.00
Robbie Ross	Commercial	4.00%	$500,000	$340,000	$13600.00
Mike Lueero	Residential	4.00%	$150,000	$65,000	$2600.00
Gary Gigot	Residential	7.00%	$700,000	$260,000	$18200.00
Mary Freeman	Residential	3.80%	$450,000	$60,000	$2280.00
Joan McAnhur	Residential	2.60%	$250,000	$99,000	$2574.00
Barbara Miller	Commercial	3.00%	$250,000	$130,000	$3900.00
Robyn Komachi	Commercial	2.80%	$780,000	$240,000	$6720.00
	Residential		704,000		
	New		325,000	46.16%	
	Prev. Owned		250,000	35.51%	
	Land Only		129,000	18.32%	
				100.00%	



Everything you see above was created using some combination of the five tools within Microsoft Works 2.0: word processing, spreadsheet, database, drawing and communication. As you can see, the real power of Microsoft Works 2.0 comes into play when all the tools are used together.

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DRAKE SOREY

Barco's Calibrator is a combination of intelligent monitor, optical sensor, and color-calibration software.

mode. Calibrator Talk also lets you save different monitor configurations for different situations, so you have stable, accurate, and repeatable images. It downloads the specific values of the Calibrator display to the Mac, which then calculates absolute gamma corrections.

Intended for such applications as electronic photography and retouching, electronic prepress, and textile design, the 20-inch Calibrator monitor and the Calibrator Talk desk accessory are shipping now for a combined price of $8660.

Radius's new product is the PrecisionColor Calibrator, a combination of a fiber-optical sensing device and software that works with the Radius Color Display System, the company's existing two-page color monitor, and an 8-bit, 16-bit, or 24-bit Radius display adapter. Designed for the Mac II series, the PrecisionColor can also calibrate the Apple 8-bit color system or the Radius Gray Scale Display System. After you select the PrecisionColor icon from the Control Panel and attach the sensor to the screen, it takes about three minutes for the ADB device to calibrate the monitor to match Pantone colors.

A user can select and store color preferences, so that several workstations at several locations can faithfully reproduce the same output, according to Radius. The settings can include color temperature and gamma correction. Slated to ship in November, the PrecisionColor Calibrator has a list price of $695.

For more information, call Barco in Smyrna, Georgia, at 404/432-2346, or Radius in San Jose, California, at 408/434-1010.—*T.M.*

HP Color Printer and Interface Support 32-Bit QuickDraw

Hewlett-Packard recently introduced the PaintJet XL color printer, which is a faster version of its existing PaintJet, and an improved Mac interface that will work with both PaintJet models. The HP Color PrintKit for the Mac supports 32-bit QuickDraw, outputting 16.7 million colors on the Mac II, IIx, IIcx, and SE/30, when those systems have 24-bit color display adapters installed.

The HP Color PrintKit will also allow a Mac Plus or SE to produce eight colors when used with software such as Cricket Paint, which supports color-picking on noncolor systems. The kit also includes 13 LaserWriter-matching outline fonts that can be scaled from 6 points to 250 points. The fonts are compatible with Apple outline fonts and will work under Adobe Type Manager. HP is offering 25 other LaserWriter-matching fonts.

The HP Color PrintKit supports background printing and incorporates HP's own version of Print Monitor. Available now, the HP Color PrintKit retails for $125.

The PaintJet XL is up to three times faster than the existing PaintJet when printing full pages of graphics and can handle larger paper, up to B size. The PaintJet XL also offers front-panel control, a larger print buffer, and longer-lasting ink cartridges. Both printers produce 180 dpi and work better with paper and transparency film from HP. The PaintJet XL is now shipping at a retail price of $2495. HP also said it is looking at all its PC-compatible peripheral products and considering whether or not to convert them to the Mac in the way the company did with the DeskWriter, a completely Mac version of the PC-compatible DeskJet printer. For more information, call HP at 800/752-0900. —*T.M.*

Narrowing the Information Gap

A project at the University of Texas at Austin is taking Mac-mainframe connectivity beyond the realm of dumb file servers and print spoolers, with UserInfo, an INIT that watches what Mac users at campus locations are doing and keeps the Computation Center's host machines informed.

When a Macintosh user wants a service, such as laser printing, that is provided by the Computation Center's UNIX-based VAX 11/780s, he or she opens the Chooser and clicks on the service desired. A dialog box requests name and password, and UserInfo then sends that information to

(continues)



HP's PaintJet XL connects to Macs via an optional interface kit. The printer can produce 16.7 million colors on 24-bit systems.

Moving Write Along...

PLI has been making Macintosh drives since 1985 and we're moving write along with next generation drive technology. PLI features award winning solutions for your storage and connectivity requirements, with performance software to improve productivity.

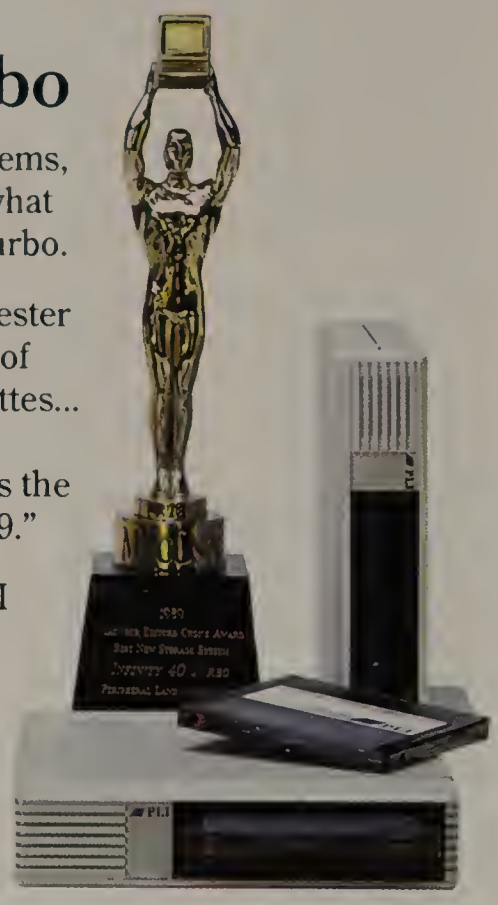
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Of all the removable storage systems, there is only one that gives you what you need... The PLI Infinity 40 Turbo.

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Fitting a non-standard optical disk into another drive is like fitting a square peg in a round hole. Luckily, the removable experts at PLI have introduced the Infinity Optical according to the ISO standard.

The Infinity Optical combines unlimited storage capacity and Sony reliability with optical rewritability and the convenience of removability.

Interface kits are available for the Macintosh, IBM-XT, AT, PS/2, compatibles and A/UX. With a 650 MB single or 1.3 Gigabytes twin, you can write a lot again and again and again.



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Circle 214 on reader service card



STEVEN PUMPHREY

University of Texas programmer Chris Johnson wrote UserInfo to simplify providing mainframe services to campus Mac users.

the VAX. The VAX checks the person's account, spools the printing, and debits the print job in the university's accounting system, which runs across VMS machines, an IBM mainframe, a Cyber mainframe, and other dissimilar machines.

According to Chris Johnson, the programmer at the university's Computation Center who wrote the Mac side of UserInfo, "some assembly is required" on the UNIX side to send the accounting information where it belongs. What is actually going on, Johnson explains, is that by building on a public domain package called the Columbia AppleTalk Package, UserInfo is presenting the mainframe itself as a Chooser icon. "We want to add color laser printers and different kinds of paper," Johnson says, "and that's easy to do. All we have to do is tell the UNIX machine it has another laser printer called 100% Cotton and Macintosh users will see the new "printer" appear in the Chooser. UserInfo can be made to manage other services besides printing and accounting. For example, Johnson says, "UserInfo has the mainframe send a useful message if a print job gets messed up, or if you want to tell everyone in a computer lab that the lab is closing for the night."

Johnson hopes the University of Texas will license UserInfo with source code and examples at no charge, but no decisions have been made about distributing to public agencies or private companies. Johnson, who also wrote the public domain virus-blocker Gatekeeper, hopes to develop a VMS version at some point. For more information, contact UT's Manager of Microcomputer Technologies, Morgan Watkin, at 512/471-3241.—*D.L.*

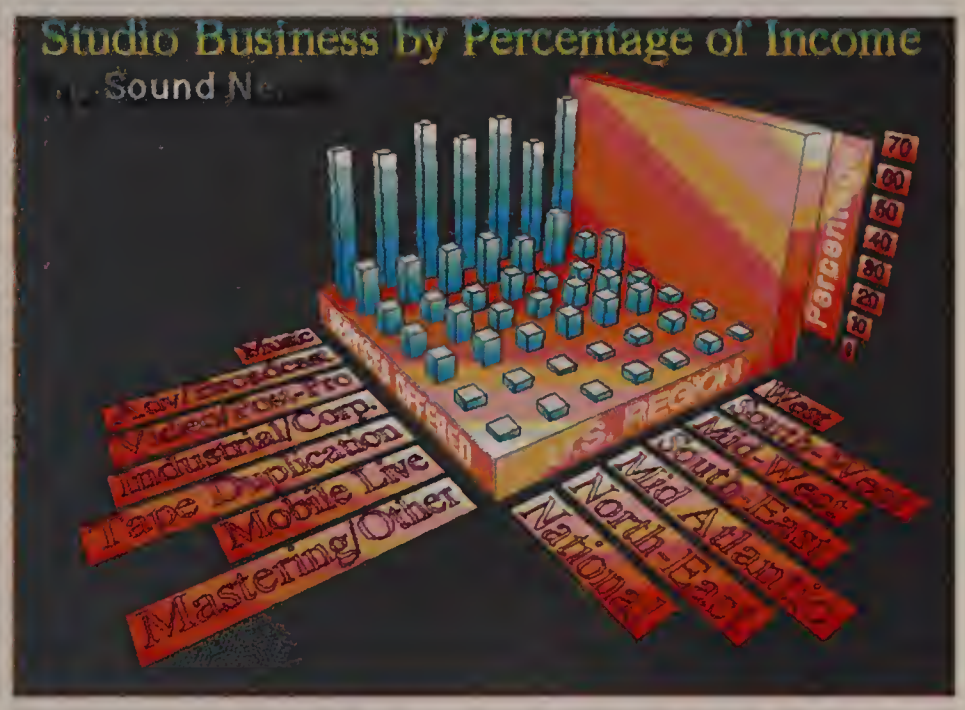
Turning Numbers into Art

FoxGraph/Mac is a new graphing package from Fox Software that can create a wide variety of colorful 2-D and 3-D graphs with astounding special effects. FoxGraph's intuitive interface makes creating and perfecting graphs simple. In addition to tables and text charts, it provides 20 kinds of 3-D graphs, including thick ribbons; surface maps and flying carpets; surface nets; bars and connected bars; floating cubes; and pyramids. FoxGraph/Mac's 60 styles of 2-D graphs include many variations of bar, line, pie, area, histogram, and other standard 2-D graph types. The 3-D graphs can be rotated about all axes, stretched, and distorted, and they redraw quickly. Both 2-D and 3-D graphs provide great control over data scales, labeling, and text formatting. Basic tools are available for drawing boxes and arrows and annotating a chart.

FoxGraph/Mac's use of color and imported graphics is its most impressive feature. A wide variety of color washes can be applied to background and foreground objects, and you can stretch or duplicate an imported PICT, PICT2, or EPS file; map it to bars and other objects; or apply textures such as wood, marble, chrome, or fabric to any part of a graph. Completed designs can be saved as number-ready templates. FoxGraph/Mac saves in PICT, PICT2, and EPS, and can print on film recorders, color printers, and any Chooser device. Graphs and text charts can also be displayed on screen in a slide-show format.

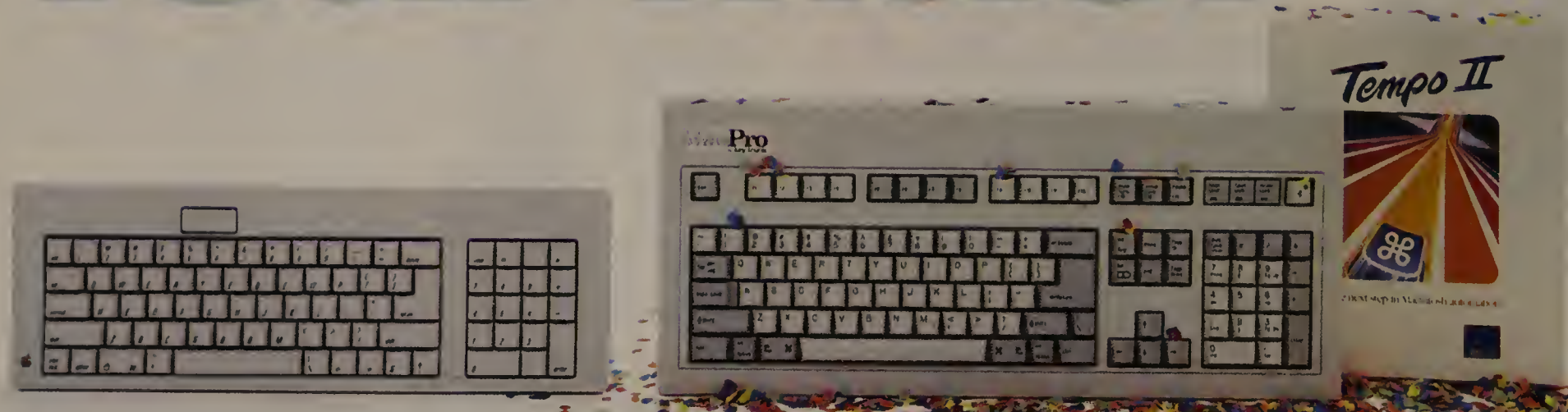
FoxGraph/Mac is for creating graphics, not for manipulating data. The program can import data in standard formats into a 512-by-512 grid, but it provides no calculation capability at all, and creating and comparing multiple graphs from one chunk of data is cumbersome. It is best to finish manipulating your numbers and figure

(continues)



The vast array of special effects possible in FoxGraph/Mac is sure to lead many graph makers beyond the limits of good taste.

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out what you want before starting to graph. FoxGraph/Mac should ship by the end of this year. For more information, contact Fox Software in Perrysburg, Ohio, at 419/874-0162.—*D.L.*

A Slew of Erasable Optical Drives Materializes

Erasable optical (EO) storage is finally proving itself as a practical reality in the microcomputer field, as shown by a number of recent introductions. Advanced Graphic Applications (AGA), Maxcess, Microtech International, PLI (Peripheral Land), and SuperMac Technology all announced EO drives based on Sony's mechanism. Storage Dimensions introduced a series of drives based on a design by Maxoptix Corporation, a subsidiary of Maxtor, Storage Dimensions' parent company. Pinnacle Micro began shipping an optical drive based on the Sony engine earlier this year. All of the new drives use the SCSI interface.

The AGA drive, called the MacDiscus, is currently available at $6495 for external drives. The Maxcess 600L, also shipping, retails at $5995 including Retrospect archiving software. The Microtech OR650, which comes with public domain software and demo versions of Microsoft Excel, 4th Dimension, and Aegis Development's Showcase F/X, is available at a suggested retail price of $4795. PLI's Infinity Optical includes a collection of backup and utility software as well as Casady & Greene's AME security program; now shipping, it retails for $5695 or for $11,995 for a two-drive unit.



PIERRE YVES GOAVEC

Erasable optical drives from Storage Dimensions (left) and Peripheral Land store huge amounts of data.

In addition to its $6999 DataFrame RS Optical drive, SuperMac introduced the $4999 DataFrame XP600 and the $4899 DataFrame XP600i, external and internal 600MB hard drives. All three products come with SuperMac's disk-management software and utilities and were expected to ship in September.

Storage Dimensions' entry is the LaserStor family of one- and two-drive devices for the Mac, DOS machines, PS/2s, and the Novell Netware network operating system. The Mac version uses Storage Dimensions' Mac Installer software, which lets the drive act as the boot device. The outstanding feature of the LaserStor drives is their 35ms average access time. They can use either a 1-gigabyte cartridge or a 650MB cartridge. The latter is compatible with the ISO standard for optical media. Although the ISO standard is designed to provide interchangeability between different companies' drives, several vendors disagree as to the practical degree of interchangeability currently possible.

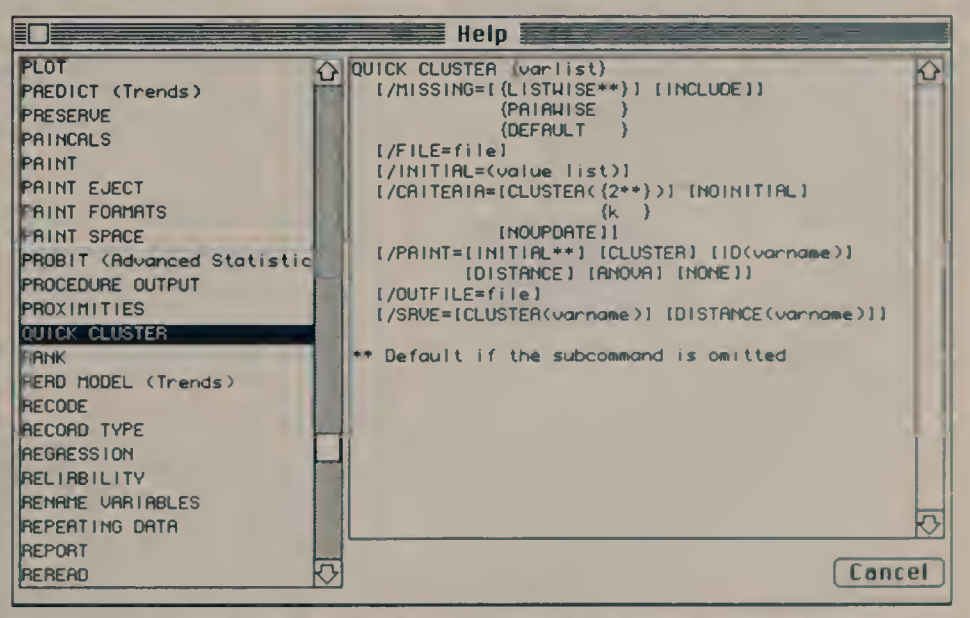
Scheduled for volume shipments beginning in September, a single-drive LaserStor for the Mac will retail for $7995. For more information, call Storage Dimensions in San Jose, California, at 408/879-0300; AGA in New York City at 212/337-4200; Maxcess in Philadelphia at 215/386-2208; Microtech in New Haven, Connecticut, at 800/626-4276; PLI in Fremont, California, at 415/657-2211; or SuperMac in Sunnyvale, California, at 408/245-2202.—*T.M.*

Big Statistics for Little Computers

Statistical Package for the Social Sciences (SPSS), considered by many to be the premier tool for statistical analysis on mainframe computers, will soon be available on the Mac. SPSS is not intended for the casual dabbler in statistics. The basic module, which may be all that many users need, lists for $795 and requires 6MB of disk space and at least 2MB of RAM. Twice that much RAM and a math coprocessor are preferable, however. Four add-on modules (for multivariate analysis, time-series analysis, conjoint and correspondence analysis, and preparing stub and banner tables), which boost the total disk space requirement to 17MB, are available for $395 each.

For this investment you will gain 100 percent of the functionality of SPSS's mainframe sibling, wrapped in a user interface that also remains true to the mainframe version. SPSS provides some charting and layout capability,

(continues)



Help with SPSS: the left window lists all the SPSS commands, and the right window lists all possible parameters for each command.



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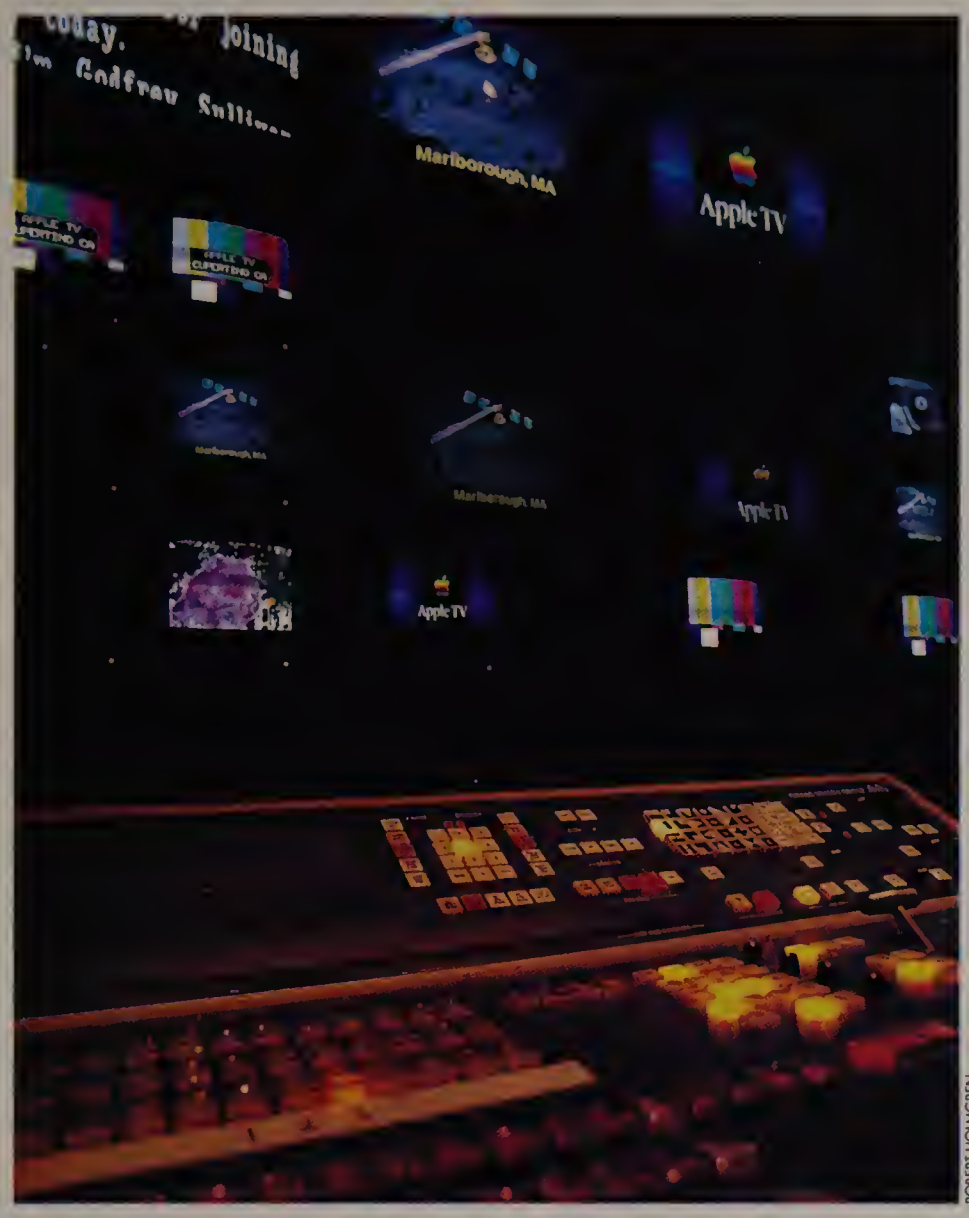
but it is primarily a text-based, programming-oriented product.

You can build command files point-and-click style rather than by typing commands, and SPSS outputs an editable text file, which is convenient for transferring the results to other applications. SPSS even provides a rectangular cut-and-paste feature that enables you to select individual columns from tabular text. There is also extensive online help and a glossary. Of the other statistical packages currently available for the Macintosh, only Systat offers comparable breadth and power. For analysis of variance, the newly released SuperANOVA (from Abacus Concepts) combines similar high-end capabilities but with a much more graphics-oriented interface. DataDesk Professional from Odesta and JMP from SAS (which has not yet been released) use graphing to emphasize exploratory data analysis.

For more information, contact SPSS in Chicago at 312/329-2400.
—*Ted Landau*

When TV Meets High-Tech

Apple's corporate television station, Apple TV, had two goals when it began producing shows in October 1988: to provide corporate services, such as long-distance video conferencing and training videos (for example, Apple TV has produced videos for educating dealers about AppleTalk networks); and to showcase Apple's technology with Macintosh front ends for sophisticated TV equipment.



ROBERT HOLMGREN

The command center at Apple's in-house television facility. HyperCard interfaces drive much of the studio's equipment.

Macs are integrated into all stages of Apple TV's video production process. During preproduction the Mac is used for storyboarding and for scheduling facilities and managing projects. In production, a HyperCard stack drives the 96-channel Strand lighting controller, and even the TelePrompTer runs on a Mac that can receive instant updates over the network. HyperCard also controls two DMSAT Satellite Communications dishes used for distributing programming by satellite.

The really fun toys at Apple TV are used for editing tapes, mixing sounds, and adding special effects in post-production. From one electronic piano keyboard attached to a Mac II and a proprietary minicomputer, a New England Digital Synclavier synthesizer can play back, create, and edit sound effects and music, and then time the sound track to the video. For editing the video footage, an Avid/1 Media Composer plays back video stored on a hard disk. Icons represent scenes, and the editor arranges them by dropping them into windows, where they can be overlapped, shortened, zoomed in on, and so on. When the final arrangement is ready, the software generates an edit decision list, and special equipment (or a person) makes the changes on tape. Even the router controller, the master device that controls the studio's 64 video and sound channels, can be controlled with HyperCard from any Mac in the station.

One important piece of equipment lacks a Mac interface. Apple TV's Digital F/X system provides a wide variety of special capabilities including overlaying captions, painting on images, and animating objects. It uses a Windows/386 front end, but the company is committed to running on multiple platforms and, with Apple as part owner of Digital F/X, it may not be long before a Mac II is driving that key component as well.—*D.L.*

MicroTV Supports Soaps on a Mac

One of the most interesting recent add-in products for the Mac is Aapps Corporation's MicroTV, a board that puts a small black-and-white television window into your Mac's display. MicroTV comes in versions for the SE and the Mac II series. It gets its video input from a cable system, VCR, video camera, laser disk, or other standard NTSC video source. You select the video source, channel, and volume through software. MicroTV can also capture any displayed video image in real time.

MicroTV also can work concurrently with applications, so you could use it to display a training tape next to instructional text, for example. Several of the devices can be used on a network for group instruction, according to Aapps.
(continues)





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The video window measures about 1.3 inches high by 1.7 inches wide and has 128 levels of gray scale and resolution of 128 by 96 pixels. An optional memory upgrade supports 192-by-256-pixel resolution. The board incorporates a 98-channel, cable-ready tuner. It is also available in PAL and SECAM formats for use outside the United States or in professional video applications.

ware, and program filters. And MicroTV Professional will support HyperCard XCMDs, capture of full video resolution, and special effects. Its price had not been finally set at press time, but was expected to be \$595. If so, an upgrade to MicroTV Professional from MicroTV will cost \$200. For more information, call Aapps in Mountain View, California, at 415/961-4033, or 800/446-6393 outside California.—*T.M.*



DRAKE SOREY

MicroTV from Aapps displays a small black-and-white TV picture (upper left of monitor screen).

MicroTV has a retail price of \$395; the Mac II version was scheduled to begin shipping on November 1. Aapps hopes to ship the SE version by the end of the year. Aapps also announced MicroTV Professional, which is not expected to be available until after February. With four times the resolution and four times the window size, the MicroTV Professional board will add selectable screen sizes, developer's toolkit extensions, Exposure-Pro soft-

The Closer Look

Aperture is one of a new generation of visually oriented database and design packages that are most useful for planning and managing facilities and for tightly integrating documentation with design. This full-featured 2-D CAD package is tied to a flat-file database, so that as you lay out an office you can experiment with placing the personnel and furniture that will



Aperture combines a database and design capabilities so you can track and manage facilities—like this Mac IIcx at someone's desk.

occupy it, or as you draw up an organizational chart you can enter what projects each person is involved in. Each object in a design can have multiple records in an Aperture database, and records are not restricted to information about size and location, so you can, for example, track your office computers' serial numbers or how much it costs to equip each employee's workstation. (The database lacks the full relational power that would let you estimate, say, the cost of relocating all the employees at your company who need access to a plotter or film recorder.) A style sheet for graphics makes it possible to modify all copies of an item at once and update text on the drawing from within the database.

Among Aperture's CAD features is an unusual line tool that uses two complete mouse clicks to fix a line. This might take some getting used to for Macintosh regulars, but it lets you start a line and then change the scale, move to a different layer, look in the database, or do whatever you need to do before ending your line. You can assign objects from the symbol libraries to any combination of the program's 256 layers, and display layers in any combination. Objects' attributes can be named, saved as styles, and reused. Measurement units range from angstroms to parsecs, though Aperture's zoom range of 30 million prevents working on quite that scale; you could instead use its button feature to link drawings of sites in far-flung galaxies.

Aperture reads DXF and PICT formats. It saves only in its native format but can send PICT information to the Clipboard, and it can output to laser printers and plotters. An upcoming version will save in PICT and DXF.

Aperture lists for \$795, and a self-running demo that uses live Aperture files is available for a small shipping fee. For more information, contact Aperture Technologies in Stamford, Connecticut, at 203/975-7587.—*D.L.*

(continues)

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JOHN GREENLEIGH

Jasmine has added 130MB and 180MB hard drives to its DirectDrive, InnerDrive, and BackPac series.

Jasmine Introduces High-Performance Hard Disks

Jasmine Technologies recently announced a pair of 130MB and 180MB hard disks that the company rates at a MTBF (mean time between failures) of 70,000 hours of operation. The high-performance devices will be incorporated in Jasmine's DirectDrive, InnerDrive, and BackPac series of hard disks for the Mac line.

Both new hard disks offer a 20ms average access time, and peak data-transfer rates of 2.5MB per second. The disks include an advanced cache design with a ring buffer to improve access times.

The 130MB unit will cost $1349 in DirectDrive form, $1299 in InnerDrive form, and $1449 as a BackPac hard disk. The 180MB device will cost $1549 as a DirectDrive, $1499 as an InnerDrive, and $1649 as a BackPac model. All include DriveWare, Jasmine's system-management software; SUM and other disk utilities; encryption software; demo versions of popular applications; and 5MB of public domain software and shareware. All the models are currently shipping, Jasmine said. For more information, call Jasmine in San Francisco at 415/282-1111.—*T.M*

Reader Survey: Networking

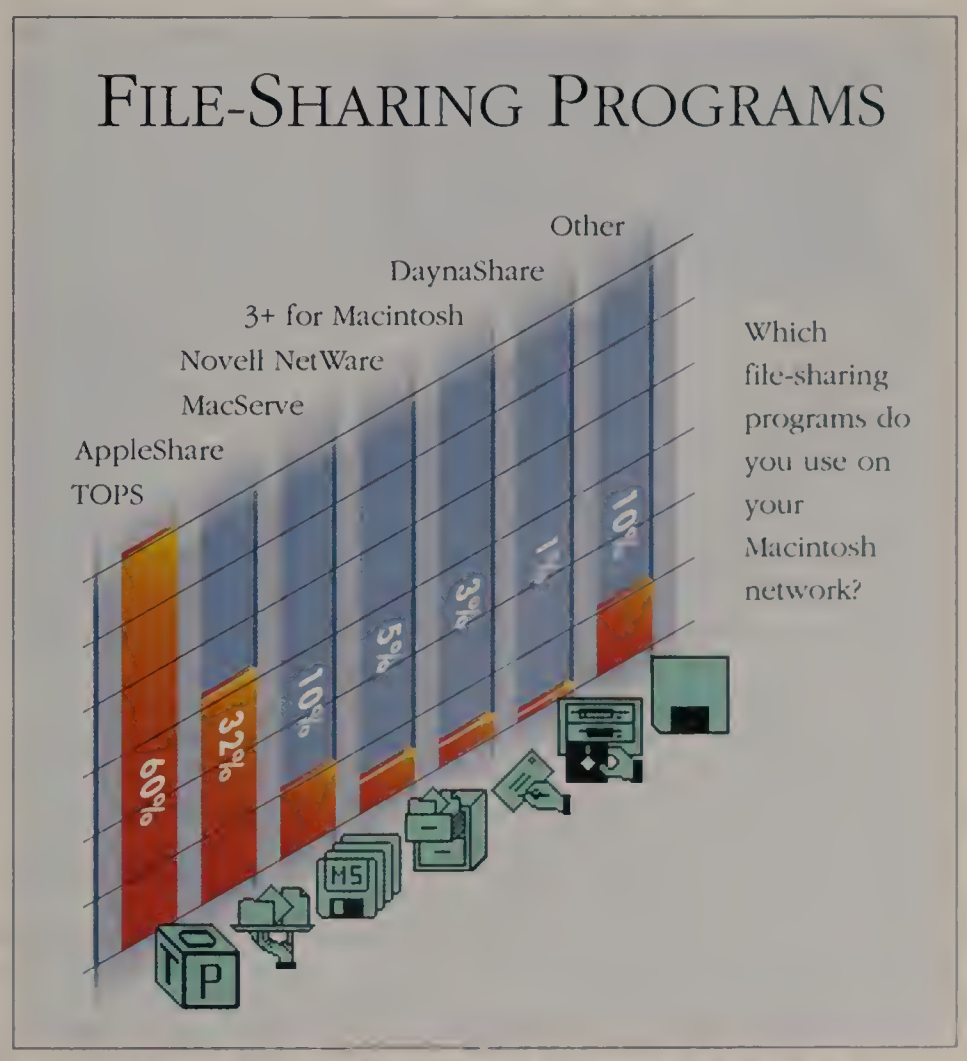
Fifty-nine percent of responding readers who use Macs at their place of business said that their Macs are networked with other computer-related hardware. When these same respondents were asked which Macintosh model they use most often for business, 47 percent said a model in the Mac II series, 42 percent cited the SE, 20 percent named the Plus, 7 percent said the SE/30, and 4 percent said the Mac 512K and 512KE. The numbers add up to more than 100 percent because some respondents use more than one model.

Also among respondents whose business Macs are networked, 67 percent said they use Apple's LocalTalk, 30 percent said Farallon's PhoneNet, 15 percent cited Ethernet, and 15 percent have another scheme. Eighty-six percent of the same respondents said their business Mac networks support file sharing. For file-sharing software, 60 percent of readers whose network supported file sharing said they used TOPS, 32 percent said AppleShare, 10 percent said MacServe, 5 percent said Novell's NetWare, 3 percent said 3+ for Macintosh, and 1 percent said DaynaShare.

Multiple answers were permitted in the cabling hardware and file-sharing software categories.

Readers whose business Macs are networked reported using them for the following applications: peripheral sharing, 74 percent; information, file, or program sharing, 72 percent; E-mail, 35 percent; multiuser applications, 26 percent; network modems, 26 percent; and distributed databases, 22 percent. Trailing behind were online services with 7 percent and facsimiles with 6 percent.

Forty-seven percent of the same respondents said they had 5 or fewer nodes in their network, 22 percent reported 6 to 10 nodes, 10 percent said 11 to 20 nodes, 4 percent said 21 to 50, 3 percent said 51 to 100, and 11 percent said they had more than 100 nodes connected.—*T.M.*



Respondents whose business networks support file-sharing indicated that TOPS and AppleShare are their favorites.

There is a Connection

WILL IT WORK ON MY MAC???? Good question. You see, most Mac users are now working on machines that have 1 Meg of RAM and the 128K ROM chips (i.e. a Mac Plus, SE, or an earlier Mac that's been upgraded to that level). For that reason, a great deal of hardware and software requires at least that configuration. So, if you own an earlier Mac 128K or 512K you should *always* tell us, when placing your order. That way we can tell you right away if what you want is compatible. And, if it's not, we can explain to you the different options for upgrading.

The majority of products we carry are now covered by 30-60 day Money Back Guarantees (as listed here in red). If you're not happy with one of those products, call us for an authorization and return it *with all of the original packaging* within the guarantee period for a refund check (or credit on your credit card).

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1617 Rags to Riches Receivables 3.1 ..... 118.
1622 Rags to Riches 3-Pak 3.1 ..... 289.
1612 Inventory Control 2.6 ..... 235.
1615 Professional Billing 2.9 ..... 235.
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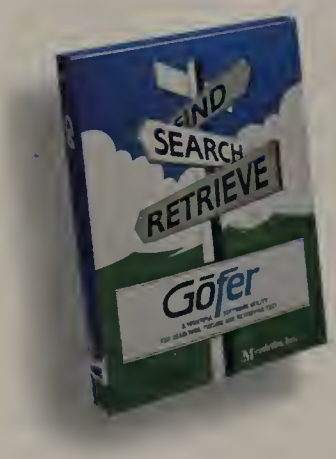
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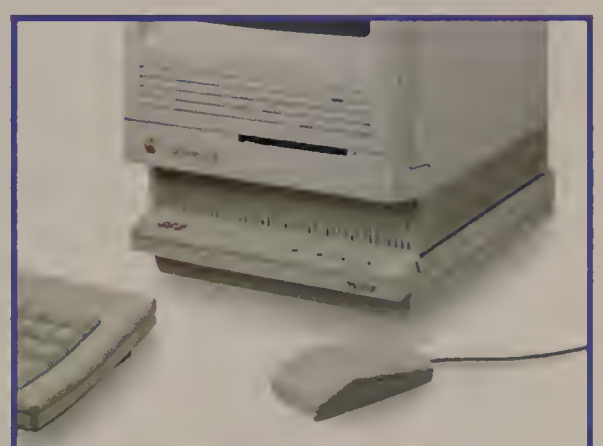
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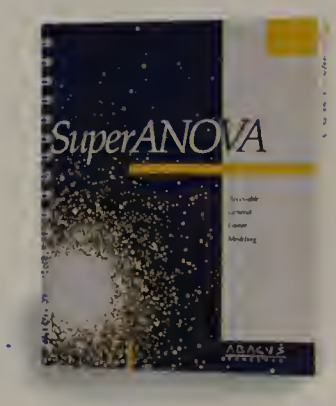
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1458 Country Disk. . . . . 13.
4832 Sound Effects . . . . . 13.
5719 Brass Disk. . . . . 13.

Bright Star Technology

3961 Talking Tiles 1.0 . . . . . 27.
1402 Alphabet Blocks 1.0 . . . . . 30.

Broderbund Software

4314 Type! 1.0. . . . . 19.
1423 Jam Session 1.1 *(CP)* . . . . . 29.
1422 Geometry 1.2 *(CP)* . . . . . 58.
4067 Calculus 1.2 *(CP)* . . . . . 58.
1426 Physics 1.2 *(CP)* . . . . . 58.

Carina Software

5726 Voyager 1.0 . . . . . 69.

Coda Music Systems

4367 MacDrums 1.01 *(CP)* . . . . . 31.
4483 Perceive 1.0 . . . . . 50.
5854 MusicProse 1.0. . . . . 169.
5604 Finale 1.2.6 . . . . . 399.

Davidson & Associates

1734 Math Blaster! 1.0 *(CP)*. . . . . 27.
4978 Speed Reader II 1.0 *(CP)* . . . . . $27.

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4619 Mavis Beacon Typing 1.2B *(CP)* . . . 32.
1846 Deluxe Music Construction Set 2.5 . 84.

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5294 Puzzle Storybook 1.0 *(ages 3-8)* . . . 27.
5293 Dinosaur Discovery Kit 1.0 *(ages 3-8)*27.
3941 SmoothTalker 2.1 . . . . . 32.
3936 KidTalk 2.0 *(ages 5-15)* . . . . . 32.
3940 First Shape 2.0 *(ages 3-8)* . . . . . 32.
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2276 KidsTime 1.2 *(ages 3-8)* . . . . . 26.
5642 KidsMath 1.1 *(ages 3-8)* . . . . . 26.
4334 NumberMaze 1.1 *(ages 5-12)* . . . . . 26.
2270 American Discovery 2.3 *(ages 9+)* . 26.
2273 ConcertWare+ 4.0 . . . . . 38.
2271 ConcertWare+ MIDI 4.0 . . . . . 78.

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5453 Talking Math Rabbit 1.0 *(ages 4-7)* . 31.

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5888 VocabuLearn/ce German *(level 2)* . . . .30.
5866 VocabuLearn/ce Japanese *(level 1)* . . .36.
5890 VocabuLearn/ce Japanese *(level 2)* . . .36.

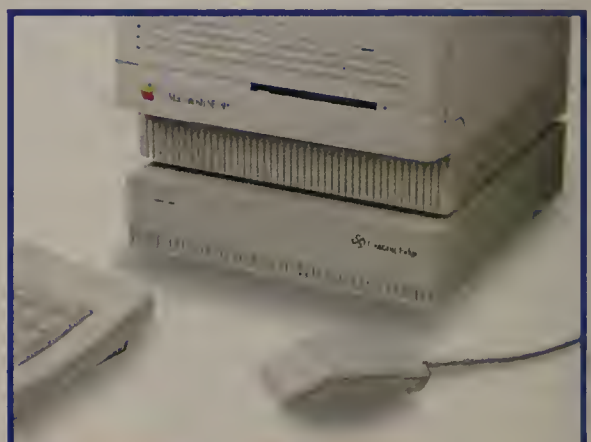
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4946 E1 Beginning Spreadsheets . . . . . 29.
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5264 B2 The Basics *(for Plus or SE w/HD)* 39.
5265 B3 The Basics *(for Mac II w/HD)* ... 39.
5266 B4 Beyond the Basics..... 39.

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4947 W1 Beginning Level ..... 39.
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5098 W3 Advanced Level ..... 39.
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5272 LP4 Creating Artwork ..... 39.

HyperEasy Training Series

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5195 H2 Creating Cards & Stacks ..... 39.
5267 H3 Basic Scripting ..... 39.
5268 H4 Advanced Scripting..... 39.

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5096 P3 Tips & Techniques ..... 39.
5097 P4 Advanced Features ..... 39.

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5197 M2 Advanced Databases ..... 39.
5273 M3 Spreadsheets ..... 39.
5274 M4 Word Processing ..... 39.

Learn88 Training Series

5259 A1 Beginning Illustrator ..... 39.
5260 A2 Intermediate Illustrator..... 39.
5261 A3 Creating Special Effects..... 39.
5262 A4 Precision Drawing Techniques.. 39.

Learn FileMaker Training Series

5278 FM1 Beginning FileMaker..... 39.
5279 FM2 Intermediate FileMaker ..... 39.
5280 FM3 Advanced FileMaker..... 39.
5281 FM4 Tips & Techniques..... 39.

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3305 Typing Tutor IV 1.2 ..... $34.

★Spinnaker ... 30 day MBG

2329 SAT Score Improvement 1.0 *(CP)* .. 57.

★Springboard ... 30 day MBG

4493 Atlas Explorer *(CP)* ..... 28.

★Think Educational ... 60 day MBG

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3616 Mind Over Mac 1.4 *(CP)* ..... 27.

★Unicorn ... 30 day MBG

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3756 Math Wizard *(CP)(ages 5-10)*..... 27.
3755 MacRobots *(CP)(ages up to 6)* .... 27.
3754 Read-A-Rama *(CP)(ages 5-8)* ..... 32.

ENTERTAINMENT

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4655 World Class Leader Board Golf.... 27.

Activision

4475 Quarterstaff *(CP)*..... 29.
4486 Manhole..... 30.
5127 Manhole *(CD ROM)* ..... 35.
5517 Cosmic Osmo..... 42.

Addison-Wesley

4407 The Hobbit *(CP)* ..... 24.
4474 Fellowship of the Ring *(CP)* ..... 24.

Broderbund Software

5886 Star Wars ..... 24.
4099 Shufflepuck Cafe *(CP)*..... 24.
4111 Moebius *(CP)* ..... 24.
1421 Ancient Art of War *(CP)* ..... 26.
4540 Ancient Art of War at Sea *(CP)*..... 26.
4229 Where/World Carmen Sandiego? *(CP)* 27.
5755 Where/Europe Carmen Sandiego? *(CP)* 29.
5233 Where/USA Carmen Sandiego? *(CP)* 29.
4966 SimCity 1.1 *(CP)* ..... 29.
4966 SimCity Supreme *(CP)* ..... 48.

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5841 Moriarty's Revenge..... 32.



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4074 P51 Mustang Flight Simulator *(CP)* . 32.

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2268 Crystal Quest 2.2T ..... 25.
4119 Crystal Quest w/Critter Editor 2.2T.. 41.



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4408 Arkanoid..... 26.

★Electronic Arts ... 30 day MBG

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1842 Chessmaster 2100 *(CP)* ..... 32.
5554 Bard's Tale ..... 32.
4064 Chuck Yeager Flight Simulator .... 32.
4588 Life & Death *(CP)* ..... 32.
4945 The Hunt for Red October..... 32.
4981 Starfleet 1 ..... 36.

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5814 Journey ..... 29.
5816 Shogun ..... 35.
4592 Zork Zero *(CP)* ..... 35.
5815 Zork Zero *(for the Mac II)*..... 35.

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5870 Bomber ..... 26.

MicroProse

4697 Pirates! *(CP)* ..... 35.

★Microsoft ... 30 day MBG

2868 Flight Simulator *(CP)*..... 33.

Miles Computing

5253 The Puzzle Gallery ..... 27.
2765 Fool's Errand *(CP)* ..... 32.
2767 Harrier Strike Mission II *(CP)*..... 32.

Mindscape

4083 Balance of Power 1990 *(CP)*..... 30.
3987 Colony *(CP)* ..... 30.
4596 Deja Vu II *(CP)* ..... 30.
2743 Crossword Magic *(CP)* ..... 30.
2749 Shadowgate *(CP)* 30
5252 Gauntlet *(CP)* ..... 30.
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5773 Strategic Conquest Plus 2.0 ..... 35.
5774 NetTrek-The Real Version ..... 35.

Sierra On-Line

4161 Mother Goose *(CP)* ..... 19.
3397 Leisure Suit Larry *(CP)* ..... 23.
3394 King's Quest *(CP)* ..... 29.
3395 King's Quest II *(CP)* ..... 29.
3396 King's Quest III *(CP)* ..... 29.
3398 Police Quest *(CP)* ..... 29.
3399 Space Quest *(CP)* ..... 29.
3400 Space Quest II *(CP)* ..... 29.

★Silicon Beach ... 60 day MBG

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3503 Dark Castle ..... *special* 24.

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3347 Mac Wizardry *(CP)* ..... 35.

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4071 Mac•Man ..... 23.
4072 The Solitaire DA ..... 23.
4995 Cribbage Tutor ..... 26.
4073 Colour Billiards ..... 38.

★Spectrum Holobyte ... 30 day MBG

4175 Solitaire Royale *(for Mac SE)* ..... 19.
4001 Solitaire Royale *(for Mac II)* ..... 19.
3464 Tetris ..... 19.
4472 Tetris *(color version)* ..... 24.
3462 PT-109 ..... 26.
3460 GATO ..... 26.
3459 Falcon 2.0 ..... 31.

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2328 Sargon IV *(CP)* ..... 29.

★Springboard ... 30 day MBG

4988 Hidden Agenda ..... 36.

★SubLogic ... 60 day MBG

4698 Jet *(CP)* ..... 32.

XOR

3144 MacGolf 2.0 *(CP)* ..... 34.
4320 MacGolf Classic *(CP)* ..... 53.
4321 Lunar Rescue *(CP)* 34
4517 Road Racer *(CP)* ..... 39.

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★Abaton ... 30 day MBG

4589 InterFAX Modem 269

★CE Software ... 60 day MBG

5817 QuickMail Remote ..... $33.
5174 QuickMail *(5 user Pak)* ..... 169.
5173 QuickMail *(10 user Pak)* ..... 249.
5636 In/Out *(5 user Pak)* ..... 129.
5638 In/Out *(10 user Pak)* ..... 189.

★CompuServe ... 60 day MBG

1676 CompuServe Information Service .. 24.
1673 CompuServe Navigator 2.1 ..... 45.
1674 Standard Service/Navigator Bundle 59.

Connect, Inc.

5834 Connect 1.5 for the Macintosh .... 95.

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1823 MacLink Plus/PC 4.1 ..... 125.
4842 MacLink Plus/Translators 4.1 ..... 99.

★Dove Computer ... 60 day MBG

4939 FastNet III ..... 375.
4938 FastNet SE ..... 375.
5624 FastNet SE30 ..... 375.
4937 FastNet SCSI ..... 749.

★Dow Jones ... 30 day MBG

5295 News/Retrieval Membership Pack. 24.
1785 Desktop Express 1.03 ..... 95.



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4866 Timbuktu Remote 1.0.1 ..... 129.
4867 Timbuktu 30-Pack 3.0 ..... 1325.
2201 TrafficWatch 1.08 ..... 132.
2202 PhoneNET to LocalTalk Adapter .... 8.
5664 PhoneNET StarConnector ..... 21.
2203 PhoneNET PLUS *(DIN-8)* ..... 33.
2204 PhoneNET PLUS *(DB-9)* ..... 33.
5251 PhoneNET CheckNET ..... 65.
4869 PhoneNET Connector 10-Pack ... 215.
4868 PhoneNET Repeater ..... 319.
2206 PhoneNET StarController ..... 1095.
2205 Star Wiring Kit *(Punchdown)* ..... 65.
5455 Star Wiring Kit *(Harmonica)* ..... 65.
5893 Portable Pack *(incl. two copies each of Timbuktu & Timbuktu Remote, two StarConnectors, and accessories)*. 375.

★Freesoft ... 60 day MBG

2219 Red Ryder 10.3 ..... 51.

Hayes

2300 Smartcom II 3.1A ..... 87.
2307 Smartmodem 2400 ..... 429.

Insignia Solutions

4089 SoftPC 1.3 ..... 245.

Intel Corporation

5119 2400 Baud External Modem ... $179.

★Microsoft ... 30 day MBG

5858 Microsoft Mail 2.0 Workstation ..... 84.
5856 Microsoft Mail 2.0 Server ..... 255.
5857 Microsoft Mail 2.0 *(20 Pack)* ..... 969.

★Nuvotech ... 60 day MBG

3000 TurboNet ST *(DIN-8)* ..... 30.
3001 TurboNet ST *(DB-9)* ..... 30.
5277 TurboBridge ..... 319.

★Practical Peripherals ... 30 day MBG

3100 1200 Baud External Modem ..... 77.
3102 2400 Baud External Modem ..... 179.
5285 PM 2400SA MNP Modem ..... 209.
3089 Mac Communications Pack 1.5 .. 225.

★Shiva ... 30 day MBG

3444 NetSerial X232 ..... 279.
4347 NetBridge ..... 339.
4942 TeleBridge ..... 339.
3443 NetModem V2400 ..... 439.

★Software Ventures ... 30 day MBG

3454 MicroPhone 1.5 ..... 115.
3455 MicroPhone II 3.0 ..... 219.

★Solutions Int'l. ... 60 day MBG

4308 BackFAX *(reqs. Apple FAX modem)* ..... 124.

★Synergy ... 30 day MBG

3130 VersaTerm 4.0 ..... 89.
3131 VersaTerm-PRO 3.0 ..... 175.

★TOPS ... 30 day MBG

4188 TOPS Teleconnector *(DIN-8)* ..... 29.
4189 TOPS Teleconnector *(DB-9)* ..... 29.
3726 TOPS for DOS 2.1 ..... 114.
4598 TOPS FlashBox ..... 123.
3725 TOPS Repeater ..... 129.
3723 TOPS Mac 2.1 ..... 145.
3720 TOPS Flashcard ..... 159.
3724 NetPrint 2.0 ..... 115.
4714 InBox Starter Kit 2.2 ..... 149.
4715 InBox Connection Mac 2.2 ..... 45.

★Traveling Software ... 60 day MBG

3729 LAP-LINK Mac 2.0 ..... 81.

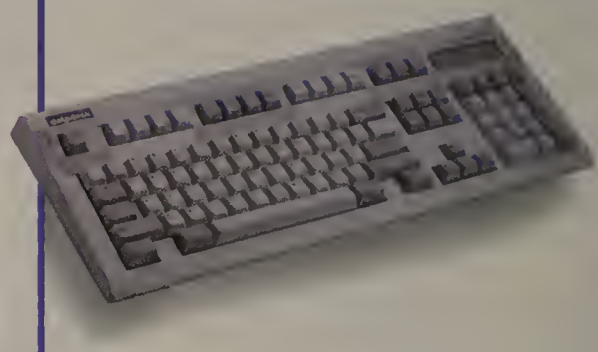
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★American Power ... 30 day MBG

5895 110SE UPS ..... 269.

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4476 OmniPage 2.0 ..... 549.



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1819 MAC-101 Keyboard *(beige)* . . . . . 139.
1820 MAC-101 Keyboard *(platinum)* . . . 139.
1821 MAC-101 Keyboard *(ADB)*. . . . . 139.
Foreign keyboards available in French, German, Spanish, and the U.K. . . . call

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2576 Turbo Mouse for Mac Plus 3.0 . . . . 109.
2547 Turbo Mouse ADB 3.0. . . . . 109.

Koala

2593 MacVision 2.0 . . . . . 219.

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2600 3-Button QuickStick . . . . . 39.
4082 3-Button QuickStick ADB . . . . . 49.

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2604 IS ADB 8½" x 11" Tablet . . . . . 255.
5161 IS ADB 12" x 12" Tablet . . . . . 385.
5162 IS ADB 12" x 17" Tablet . . . . . 625.
2605 Cordless 4 Button Cursor . . . . . 65.

★Logitech ... 30 day MBG

5082 ScanMan Mac . . . . . 325.

★LYNX Computer ... 30 day MBG

1211 LYNX Trackball . . . . . 59.
1212 LYNX Trackball ADB . . . . . 59.

★Microseeds Pub. ... 60 day MBG

4843 WristMac 1.0. . . . . 149.
5018 WristMac Executive 1.0. . . . . 199.

★Mobius Technologies ... 60 day MBG

4846 MultiScreen. . . . . 315.

★Mouse Systems ... 30 day MBG

2808 A+ Mouse . . . . . 59.
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2994 15" Monitor for Mac SE. . . . . 999.
4002 19" Monitor for Mac Plus. . . . . 1195.
4096 19" Monitor for Mac SE . . . . . 1195.
5680 19" Monitor for Mac SE30 . . . . . 1195.
4097 19" Monitor for Mac II . . . . . 1195.

Olduvai Software

5138 Read-It! OCR Personal 2.0 . . . . . 99.
3034 Read-It! OCR 2.1 . . . . . 245.

★Orange Micro ... 30 day MBG

4488 Grappler Spooler . . . . . 38.
3036 Grappler C/Mac/GS 2.0 . . . . . $78.
4076 Grappler LQ 1.5 . . . . . 103.
4487 Grappler LS 1.0 . . . . . 103.

★PTI/DataShield ... 30 day MBG

5254 MacDirector . . . . . 109.

Summagraphics

4298 BitPad Plus ADB . . . . . 319.

★Thunderware ... 30 day MBG

3648 ThunderScan 5.0 with PowerPort . 187.
4994 LightningScan . . . . . 369.
3645 Mac II Power Accessory . . . . . 45.

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5133 20 Meg Hard Drive . . . . . 439.
3990 30+ Meg Hard Drive . . . . . 499.
3991 45+ Meg Hard Drive . . . . . 549.
5275 65+ Meg Hard Drive . . . . . 629.
5276 80+ Meg Hard Drive . . . . . 739.
5456 44 Meg Removable Drive . . . . . 999.
5736 44 Meg Removable Cartridge . . . . 119.

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1802 Dove Tool Kit. . . . . 15.
1801 SCSI Interface/Port . . . . . 109.
5879 MaraThon Serial/Parallel . . . . . 195.
1807 MacSnap 524E. . . . . 185.
1809 MacSnap 524S. . . . . 239.
1811 MacSnap 548E . . . . . 419.
1812 MacSnap 548S. . . . . 479.
1800 MacSnap 2SE. . . . . 319.
1797 MacSnap Plus 2 . . . . . 319.
1804 MacSnap 2S. . . . . 209.
1805 MacSnap 4S. . . . . 409.

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1793 MaraThon 020 MSE1 . . . . . 429.
1794 MaraThon 020 MSE2 *(1 Meg)* . . . . . 719.
1795 MaraThon 020 MSE3 *(math chip)* . . 599.
1796 MaraThon 020 MSE4 *(1 Meg/chip)* . 899.
5192 MaraThon 020 MSE5 *(4 Meg)*. . . . . 899.
5193 MaraThon 020 MSE6 *(4 Meg/chip)* 1099.
4663 MaraThon 030 Accelerator 32 MHz. 969.
5878 MaraThon 030x Accelerator . . . . . 999.
5880 MaraThon 030 SE/30 Accelerator . $999.
5623 MaraThon Racer. . . . . 149.

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5391 FastNet LAN 1. . . . . 1125.
5390 FastNet LAN 2 *(1 Meg)* . . . . . 1499.
5389 FastNet LAN 3 *(math chip)* . . . . . 1349.
5388 FastNet LAN 4 *(1 Meg/chip)* . . . . 1724.
5387 FastNet LAN 5 *(4 Meg)* . . . . . 1499.
5386 FastNet LAN 6 *(4 Meg/chip)* . . . . 1729.



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5132 40 Meg Raw Drive *(25ms)*. . . . . 436.
5204 70 Meg Raw Drive *(25ms)*. . . . . 549.

IOMEGA

5552 44M Ext. Single Bernoulli II Drive. 1399.
5553 44M Ext. Dual Bernoulli II Drive. . 2199.

★Kennect Tech. ... 30 day MBG

5631 Rapport . . . . . 219.
5632 Drive 2.4. . . . . 359.

★SuperMac Tech. ... 30 day MBG

SuperMac drives include SuperSpool, SuperLaserSpool, Diskfit and Manager

5452 Dataframe 20 . . . . . 589.
5447 Dataframe XP 30 . . . . . 699.
5448 Dataframe XP 60 . . . . . 959.
5449 Dataframe XP 100. . . . . 1279.

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★Verbatim ... 60 day MBG

3772 3½" DS/DD Disks . . . . . 15.
3773 3½" HD Disks *(1.44 Meg)* . . . . 29.

★Sony ... 60 day MBG

3297 3½" DS/DD Disks 14
3298 3½" HD Disks *(1.44 Meg)* 29

★MAXELL ... 60 day MBG

2792 3½" DS/DD Disks 15
2793 3½" HD Disks *(1.44 Meg)* 29

★3M ... 60 day MBG

3943 DC2000 Tape Cartridge . . . . 21.
3944 DC600A Tape Cartridge 29

ACCESSORIES

Apple Computer

1113 Black ImageWriter Ribbon . . 10.
1114 LaserWriter Plus Toner Cartridge . . 111
1115 LaserWriter II Toner Cartridge . 119

(*All companies in red)

★Avery ... 60 day MBG

4864 Disk Labels 3½" *(Qty. 250)* . . . . $13.
5392 Disk Labels—Laser 3½" *(Qty. 630)*. 29.
5403 Address Labels 1⁷/₁₆" x 4" *(Qty. 1000)* . . . 9.
4865 Address Labels 3½" x ¹⁵/₁₆" *(Qty. 3750)* 15.
4811 Transparencies 8½" x 11" *(Qty. 50)* 22.
4813 Round Labels 3⅓" *(Qty. 150)* . . . . . 7.
4812 Laser Labels ½" x 1¾" *(Qty. 2000)* . 7.
4807 Laser Labels 1" x 2⅝" *(Qty. 3000)* . 24.
4808 Laser Labels 1½" x 4" *(Qty. 1400)* . 24.
4809 Laser Labels 2" x 4" *(Qty. 1000)* . . . 24.
4810 Laser Labels 8½" x 11" *(Qty. 100)* . 24.

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5635 Keyboard Flip . . . . . 8.
5633 LaserWriter Printer Stand . . . . . 28.
5634 Large Screen Monitor Stand . . . . . 38.

★Computer Coverup ... 60 day MBG

1722 ImageWriter LQ Cover . . . . . 8.
1723 ImageWriter II Cover . . . . . 8.
1720 Mac Plus Cover . . . . . 10.
1724 Mac SE Cover . . . . . 10.
1725 Mac SE Ext. Keyboard Cover Set . . 10.
4657 LaserWriter II Cover . . . . . 10.

★Goldstein & Blair ... 30 day MBG

2267 *The Macintosh Bible* (2nd Edition) . . 19.

★I/O Design ... 30 day MBG

2379 MacLuggage Imageware II . . . . . 49.
2376 MacLuggage Macinware Plus . . . . 64.
2381 MacLuggage Macinware SE . . . . . 75.

★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. Partial listing below.

2577 Mouseway Pad . . . . . 7.
2563 Mouse Pocket ADB . . . . . 8.
2569 Mac Plus/SE w/System Saver Cover . 9.
2558 ImageWriter II Dust Cover . . . . . 9.
2589 Universal Printer Stand . . . . . 15.
4970 Modem/FAX Protector 10 . . . . . 15.
4971 Modem/FAX Protector 20 . . . . . 25.
4126 LaserWriter II Dust Cover . . . . . 17.
2580 Mac II Stand . . . . . 20.
2545 Universal Copy Stand . . . . . 22.
2573 Tilt/Swivel *(platinum)* . . . . . 22.
2578 Extra Long ADB Keyboard Cable . . 25.
2579 Mac II Monitor Cable Extension Kit . 33.
4972 Power Tree 10 . . . . . 19.
4973 Power Tree 20 . . . . . 27.
4974 Power Tree 50 $54
2559 Apple Security Kit 34
2568 Maccessories SuperBase . . . . . 34.
2585 Printer Muffler 80 . . . . . 43.
2586 Printer Muffler 80 Stand . . . . . 24.
4070 System Saver SE . . . . . 52.
2566 System Saver Mac *(platinum)* . . . . . 63.
2567 System Saver Mac *(beige)* . . . . . 63.
2546 A-B Box *(DIN-8)* . . . . . 63.
2556 Maccessories Anti-Glare Filter SE . . 33.
5064 Apple Color Monitor Polarizing Filter 63.
5065 Full Page Display Polarizing Filter . . 63.
5066 Two Page Display Polarizing Filter . 135.
4941 Mac II Monitor Stand . . . . . 64.
4643 Mac II Stand and Cable Kit . . . . . 64.
2561 MasterPiece Mac II . . . . . 105.
5894 PowerBacker 360 . . . . . 269.
5577 PowerBacker 450 . . . . . 339.
5578 PowerBacker 520 . . . . . 399.
5230 PowerBacker 800 . . . . . 749.
5228 PowerBacker 1200 . . . . . 949.

★MacConnection ... 60 day MBG

4623 Solid Oak Disk Case, made by New England craftsmen *(holds 90 disks)* . . 29.



Farallon Computing ... 30 day MBG
Portable Pack–Hardware, software & tools to network your Mac Portable. Includes two copies each of Timbuktu and Timbuktu/Remote screen sharing software, two PhoneNET Star-Connectors & accessories . . . . . $375.

★Mobius Technologies ... 60 day MBG

4470 Fanny Mac QT . . . . . 59.

★Moustrak ... 60 day MBG

Available in blue or gray.

2694 Moustrak Pad *(standard 7" x 9")* . . . 8.
2692 Moustrak Pad *(large 9" x 11")* . . . . . 9.
2693 Moustrak Pad L/F *(9" x 11")* . . . . . 10.

★NoRad ... 30 day MBG

5620 Shield for Mac Plus or SE *(*2524)* . . 99.
5622 Shield for Mac II *(*2523F)* . . . . . 99.

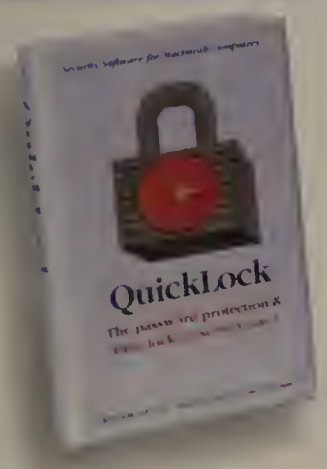
Ribbons

Available in black, blue, brown, yellow, green, orange, purple, red, silver & gold.

3255 ImageWriter II Ribbon . . . . . 4.
3261 ImageWriter II 4-Color Ribbon . . . . . 9.
3270 ImageWriter II Rainbow Six Pack . . . 20.
3260 ImageWriter LQ Black Ribbon . . . . . 17.
4011 ImageWriter LQ 4-Color Ribbon . . . 20.

★Sopris Softworks ... 60 day MBG

4171 Mac SE Std. Keyboard Cover *(navy)* . . 15.
4019 Mac SE & Ext. Keyboard Cover *(navy)* . 15.
4017 ImageWriter II Cover *(navy)* . . . . . 11.
4018 LaserWriter II Series Cover *(navy)* . . 17.
4012 High Trek ImageWriter II Carry Case . 49.



Kent Marsh Ltd. ... 30 day MBG
QuickLock 1.0–Automatic password screen protection with a cursor "hot-spot", or timeout period. Protects your network connections while allowing background processing. . $57.



Practical Peripherals ... 30 day MBG
Macintosh Communications Pack 1.5–External 2400SA Modem, cable, and top-selling communications software. Hayes compatible, auto-answer. A superior value. . . . . $225.

4013 High Trek Mac Plus Carry Case . . . . 59.
4014 High Trek Mac SE & Ext. Kybd. Case. 69
5877 Mac II Monitor Carry Case 59
5839 Mac IIcx CPU & Kybd. Carry Case . 69.
4861 SE Protection Pak *(std. keyboard)* . . 65.
4862 SE Protection Pak *(ext. keyboard)* . . 75.

★Targus ... 60 day MBG

3618 ImageWriter II Carry Case . . . . . 45.
3617 Mac Plus/SE Carry Case . . . . . 55.
4015 Mac SE & Ext. Kybd. Carry Case . . 69.

OUR POLICY

- We accept VISA and MASTERCARD
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail
- International orders U.S. $250 minimum.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 to 9:00 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST

SHIPPING

Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all credit card orders phoned into MacConnection weekdays by 8 PM EST will ship Airborne the same night for delivery the next business day (i.e. not Saturday or Sunday), except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now $3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery.
Hawaii, Alaska and Outside Continental US: Call 603/446-7711 for information.

THE ARCHITECT'S

THE FORMER APPRENTICE LEARNS THE JOB AND GETS A PROMOTION

BY OLIVER R. WITTE



The outlines of this view of Frank Lloyd Wright's Fallingwater were generated from a model of the house Steven Paul Snyder created in Architrion. Burt Monroy traced that outline in Illustrator 88 and then went to Adobe's PhotoShop, where he added all the color effects except the trees. These he created with an undocumented PixelPaint 2.0 tree-drawing feature (using the Special Effects palette, Option-click with the pencil).

In 1984 Bob Moreland invested $250,000 in a supermini-based computer-aided design system for his 14-member architecture firm, Moreland Christopher Myles, in Portland, Oregon. For five years Moreland and his partners and staff tried to make the system work.

A year ago the firm began experimenting with a Macintosh II. By last May, the supermini was gone and Moreland, the design partner, had switched from paper and pencil to Macintosh and Architrion. Now there are nine Macs, and although the firm hasn't burned its drafting boards, it has finally succeeded in making computer-aided design (CAD) a continuous process that begins with conceptual drawings and ends with a set of construction documents (see "Casa di Sogni d'Oro").

Moreland Christopher Myles can't be described as a typical architecture firm. It's twice the average size and far more receptive to automation techniques (a 1987 American Institute of Architects survey found that only 20 percent of the AIA's members were using CAD). But the firm is representative of a new magnetism developing between small, creative firms and the Macintosh.

The first wave of computerization in architecture focused on drafting and secretarial functions, and it wasn't very exciting. Drafting comes after design and is done by lower-paid employees, most of whom are not architects. In computer terms, drafting might be called line processing.

The new wave of computerization, which is being led by the Macintosh, is providing architects with a more creative tool that they can use earlier in the process. Architecture is art, and architects are first and foremost designers. Unless the computer can help them plan, dream, visualize, and model, it's irrelevant.

But architecture is also part science and part business. Because most architecture firms are small,

PARTNER

most architects can't afford to focus exclusively on any one aspect of their practice. Unless the computer enables architects to shift quickly between major applications—without researching manuals—it's impractical.

The Mac's weakness as a computer for architects has been its 2-D drafting software. As line processing tools, Macs are at least a year behind their DOS competitors. Most Macintosh CAD developers are still struggling with such basic problems as the creation and editing of parallel-line walls, the insertion of door and window symbols, and associative dimensioning. Nevertheless, conversations with architects throughout the country indicate that the Mac's creative orientation and versatility are filling a major void. In July 1987, *Macworld* reported on the impact of the Macintosh on architecture under the title "The Architect's Apprentice." As the Mac learns its job, it is rapidly advancing to become the architect's partner.

Design

Architecture begins with sketches. These early scribbles seldom have any artistic merit, but they are the basis of discovery in building design. An architect often will be unable to say whether an idea appeared first in the mind or on the yellow tracing paper affectionately called bumwad.

Although architects are trained to think in 3-D, construction requires plans, specifications, and details, which are a combination of text and 2-D drawings. Unfortunately, no program on any platform combines the immediacy and the precision needed for an architectural sketching tool. Paint programs lack precision, draw programs produce prematurely stiff lines that don't look like sketches, and PostScript programs don't seem natural enough.

Jim Gray modeled this rendition of the Chrysler building in MiniCad and then exported it to StrataVision, where Ken Bringhurst used a 400-line video camera and a RasterOps frame grabber to capture the clouds and granite texture from life. Both were then applied to the building via StrataVision's image-mapping features.

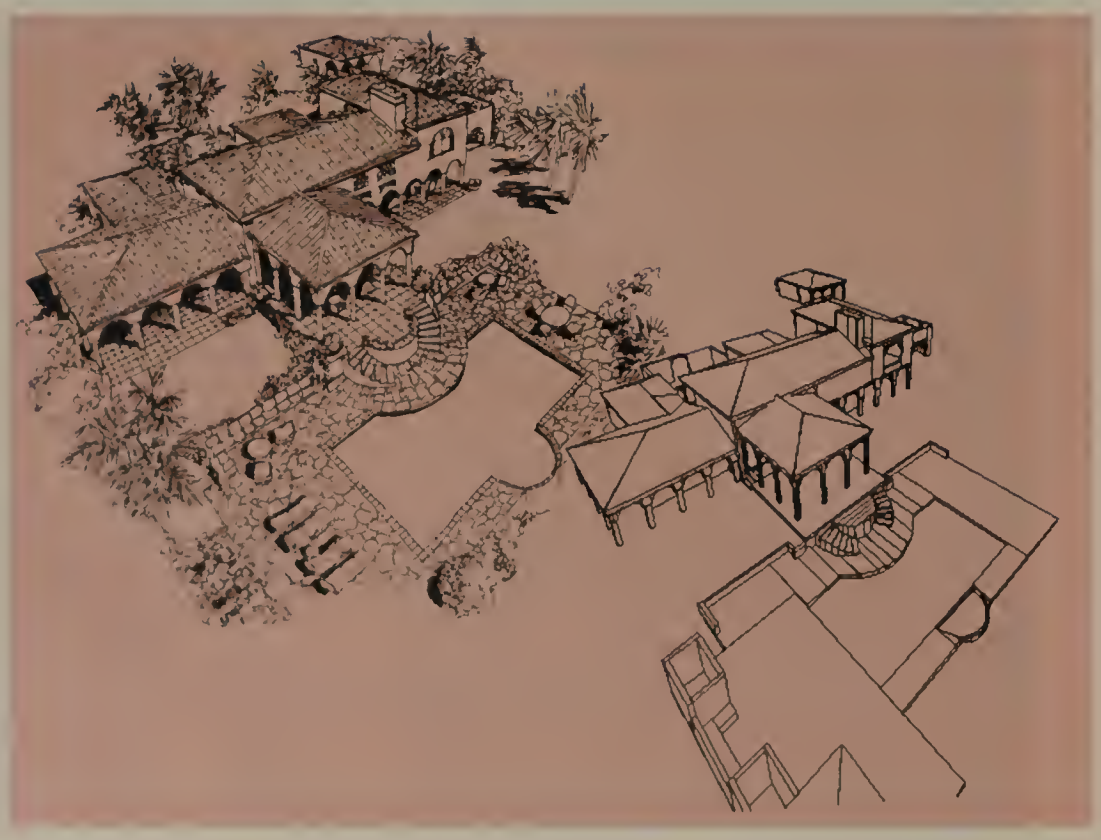


Barry Isakson, AIA, a project architect for Neil Stanton Palmer in Torrance, California, is very pleased with his experiments in sketching with Dreams, a program that combines some of the precision features of a CAD program with the ease-of-use of a paint package. Like many architects, he prefers to start with loose shapes, called bubbles, to organize space. Dreams' principal advantage over pencil and paper is its full range of computer conveniences, such as symbols, area calculations, and dimensions as needed. As Isakson moves the boundary of a bubble, he can check the square footage inside to make sure he is within limits. He also likes the feeling of having 256 colored pencils at hand.

Robert C. White, AIA, of Fernandina Beach, Florida, has also adapted his drawing technique to the computer. He now visualizes his design process as the assembly of functions into a building (see "Solving the Design Puzzle"). For example, a house might begin as a series of rectangles labeled master bedroom, nursery, kitchen, and so on. He then groups and sculpts these building blocks into a plan. "I'm assembling ideas rather than drawing ideas," White says. "For this, Dreams makes a great bumwad. If some mass is out of proportion, I can enlarge or reduce it immediately without having to redraw the rest of the work." Rather than trying to make Dreams into a scribble tool, he's willing to accept sketches that some might feel are prematurely finished-looking.

White says this technique takes some getting used to, but then most architects need five years to learn to draw with a pencil. "Should you expect to learn a new tool immediately?" he asks.

Casa di Sogni d'Oro
Architrion takes Robert S. Moreland all the way from conceptualization to presentation. He begins by sketching in 2-D and then moves to 3-D mode to develop his ideas more fully. Because he likes presentation sketches that don't look too finished (a look that can make clients feel they can't make changes), he plots his basic view using the computer (right), and then traces over it.



Sharon Roe, a Minneapolis architect, says she has discovered a simple 3-D sketching tool—a concept that poses at least two conflicts in terms. The program, SpaceMaker, was still in beta testing when this was written; it enables her to construct, analyze, and alter simple 3-D shapes more quickly than on bumwad. Roe has also discovered that she can print out the individual faces of a building on a dot matrix printer, cut them out, and paste them on cardboard, to assemble a geometrically correct physical model with complex shapes in only a few minutes.

The trouble with thinking in 3-D and drawing in 2-D, which is, after all, what architects do, is that the two processes are simply different. ArchiCAD bridges this gap between thinking and drawing by providing instantaneous transitions between 2-D and 3-D views of a project. Martha A. Bell, AIA, of Palatine, Illinois, chose ArchiCAD because, she says, "it makes the connection between what I see [2-D] and what I think [3-D]." She says she can create quickly in 2-D a drawing that can be converted immediately to 3-D, which is a much more effective medium to explain a design idea to a client.

Although ArchiCAD permits the architect to move back and forth between 2-D and 3-D representations, editing must be done in 2-D.

One of the reasons architects sketch on tracing paper is so that some aspects of a previous drawing can be incorporated in a new sketch by tracing rather than by redrawing. Martin E. Sell, AIA, vice president of the Hoffman Corporation in Beaver Dam, Wisconsin, uses the computer to realize the same economy with even less effort. He scans in an existing drawing, makes use of the autotrace feature incorporated in programs such as FreeHand and Adobe Streamline, and then begins to develop the new scheme. It beats tracing or redrawing by hand, he says.

A special class of CAD program known as 2½-D offers some visualization tools without the drafting speed penalty exacted by a full 3-D database. VersaCAD, for example, permits isometric and perspective views by extruding the lines of a floor plan straight up a specified distance. The program will even remove hidden lines.

But 2½-D programs fail a major litmus test of true 3-D: they are unable to construct a sloping roof over walls of unequal height. No problem, says Samuel Cleveland, AIA, of Charlottesville, Virginia. Using VersaCAD, he simulated a sloping roof on a model of an octagonal house by creating a series of roof setbacks, each with an increasing height (see "Roofs in VersaCAD"). The simulation took three hours to create, but it filled the bill for an unusual situation. For Cleveland, 2½-D is sufficient. He'd rather get a full perspective with hidden lines removed in 30 seconds



PROPOSED ATRIUM, ELECTRICITY HOUSE, BRISTOL © FERGUSON MANN AND PARTNERS, HARTE RUTTER ASSOCIATES

Electricity House, Indeed

Harte Rutter Associates, in Bristol, England, used ArchiCAD to generate the basic perspective for this view. Anthony Lucas rendered the color image in PixelPaint 2.0.

than wait minutes or hours for a true 3-D program to deal with all the superfluous geometry.

Drafting

Although 3-D modeling and presentation represent CAD's more glamorous side, 2-D drafting functions are the basic essentials. Until the vendors of Macintosh CAD programs add more functionality, users are challenged to find creative ways to work around limitations.

One of the most basic features of an architectural CAD program is the ability to draw parallel lines representing the inner and outer surfaces of walls. At the corners, inner lines should be continuous and should not connect to outer lines. "The inability to draw parallel lines is the worst failing of many Macintosh CAD programs," said Frank Mascia, AIA, of Tucson. Mascia's technique is to draw his floor plan in single lines. He then groups the walls, changes their line weight to heavy, duplicates the walls, selects one wall line, and changes its line weight back to thin and its line pattern to white. This gives a thin white line over a thick black line. The last step is to select both lines, choose align, and center the lines top to bottom and left to right. The technique also works for any feature that requires a double line, such as roads and streets.

Since most architecture firms are small and either unable to make large purchases or unaccustomed to spending money on computers, many of them try to make do with minimal equipment. But drafting with a Mac Plus presents serious handicaps. To minimize memory limitations, Richard H. Jenkins, AIA, of Ra-

ARCHITECT'S SOFTWARE RESOURCE

The following is a selective list of software of interest to architects. Use it os a jumping-off ploce for further research. For contact information, see *Where to Buy*. Progroms marked with on asterisk were still in beta testing at press time.

INTEGRATED 2-D/3-D CAD PROGRAMS

ArchiCAD 3.34 Architectural specific. Integroted 2-D, 3-D, and bill of materials. The only CAD progrom that provides toll-free support. $3950.

Architrion II Also architect-specific. Newest version adds color ond shading. $2495, plus $295 per year for support.

AutoCAD, Releose10 Doesn't include AEC Architecturol templote ond AutoShade, which are part of the MS-DOS version. $3000.

*Facilities Optimized for focilities monogement. $4900, plus $495 for library, $495 for IGES translator, and $735 per year for support and updotes.

MicroStation Moc Seamless interfoce to Intergraph workstations. $3300.

MiniCad+ 2.0 One of the originol Moc CAD programs. $695 including two disks of symbols, plus $300 for plotter drivers.

2-D CAD PROGRAMS

Claris CAD1.0v3 Well-thought-out interfoce, though the progrom locks basic orchitectural features such os associotive dimensioning, parallel lines, and automotic insertion of doors ond windows. $799, plus $229 for DXF/IGES translator. Advonced System Design sells o companion library of 2700 symbols, about half orchitecturol, ot 1/4-inch scale. $120.

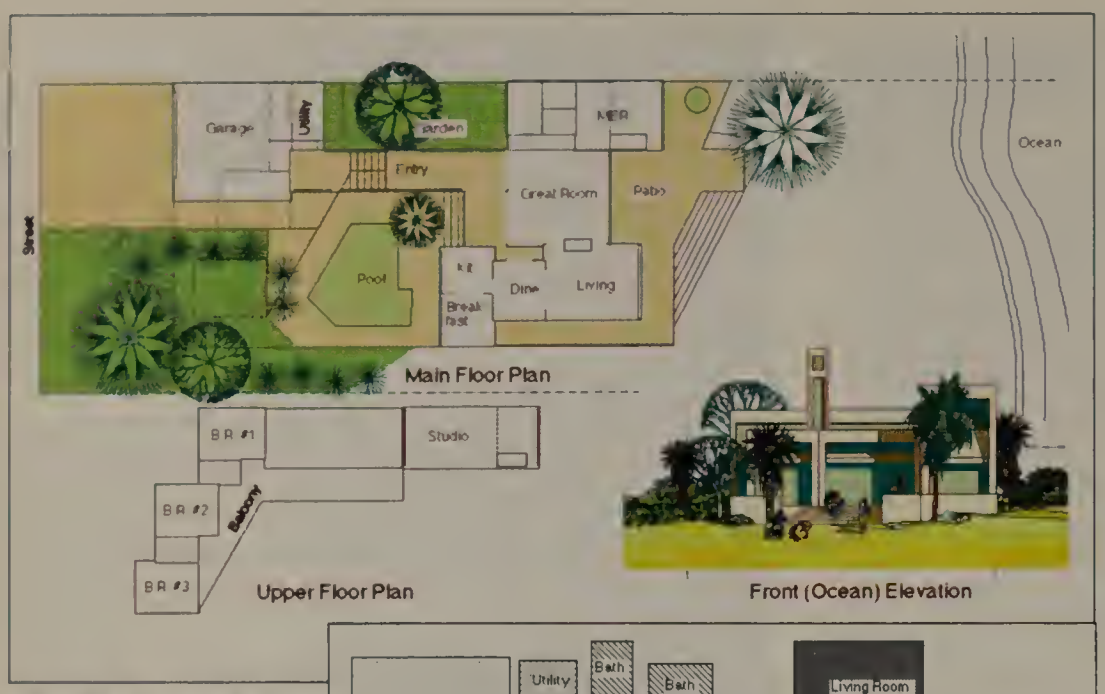
Dreams 1.0 Object-oriented sketching capability. $500, plus $249 for each of three symbols librories.

Flexicad 1.2 Supports true digitizing through the Apple Desktop Bus. $1495.

Generic CADD 1.1 Basic drofting tool. $149.95, plus 15 symbols librories ot $24.95 to $74.95.

PEGASYS II 3.2.3 Includes smart woll commands. $1795, plus $195 for each symbols library ond $195 o year for support.

PowerDraw 2.0 Fast. $795, plus $195 for





Solving the Design Puzzle

Design is like a construction process for Robert C. White. He prefers to start by creating forms that approximate the size and shape of the rooms a project requires (insert); he then develops the plan by arranging these building blocks in various configurations. Dreams makes it easy to change sizes and experiment.

leigh, North Carolina, has discovered how to reduce the storage space drawings require by assembling architectural details from standardized parts. Rather than store 20 varieties of metal door frames, for example, he stores the components and selects those he needs for a given situation. It's not ideal, but it works.

Computer speed is another important issue in drafting productivity. The Macintosh is comparatively slow in repainting the screen for a large drawing, according to Richard E. Sipin, computer manager for the DePalma Group in Chicago. His solution: he resets the colors to 16 so the Mac can redraw much faster. For most drafting functions, Sipin has found, the operator does not need all 256 colors.

Another one of Sipin's speed-up tricks is to create a RAM disk. This works best with CAD programs like PEGASYS that create large temporary files on the hard disk. Sipin uses RamSnap by Dove.

A hot topic among architects is whether AutoCAD on the Macintosh is better than AutoCAD on a DOS-based computer. Early indications are that AutoCAD's Mac migration is causing at least some architects to switch allegiances.

AutoCAD enthusiast James A. Lennon, AIA, of San Diego, has experimented with both platforms. He has decided that although he respects his DOS machine and isn't likely to abandon it anytime soon, he loves his Mac and will use it for future drafting projects. Lennon cited these advantages of AutoCAD on the Macintosh:

- Tear-off menus are immediately available as icons. AutoCAD for DOS machines does not offer tear-off menus.
- Under MultiFinder, AutoCAD can run simultaneously with other applications, a major benefit for efficient drafting.
- Drawings can be transferred to other applications quickly and effortlessly. This is important because AutoCAD lacks some features that are important to architects. For example, Lennon likes to use Canvas for shading, shadows, airbrushing, and background screens. With Studio/8, he can add translucent colors.
- In Lennon's opinion, Macintosh networks work better than DOS networks.

Lennon also notes a disadvantage: object snap takes significantly longer on the Macintosh. In fact, the program is generally slower on a Mac than its DOS counterpart.

AutoCAD is one of the Macintosh CAD programs that doesn't do parallel-line walls. On DOS-based platforms, AutoCAD can draw parallel lines with the assistance of the AEC Architectural template, but the template is not available for the Macintosh. Lennon solved the problem by writing a 65-line routine in LISP, the programming language AutoCAD uses.

But writing LISP code is not everyone's cup of tea. Jason Osgood, the sysop of a Seattle bulletin board run by Alacrity, authored a shareware LISP routine called Walls Arc. The code, which runs to 125 lines, can be found under the Files menu and downloaded at no charge from 206/643-5477. Jamie Clay, a product support analyst for Autodesk, has an edited version running to 64 lines. Clay also is the author of McMenu, an AutoCAD template that has many of the features of AEC Architectural—including parallel-line walls—and generally makes AutoCAD more Mac-like. Clay's template is available as freeware on CompuServe, under Go Adesk, Data Library No. 1, McMenu.Sit.

Output Devices

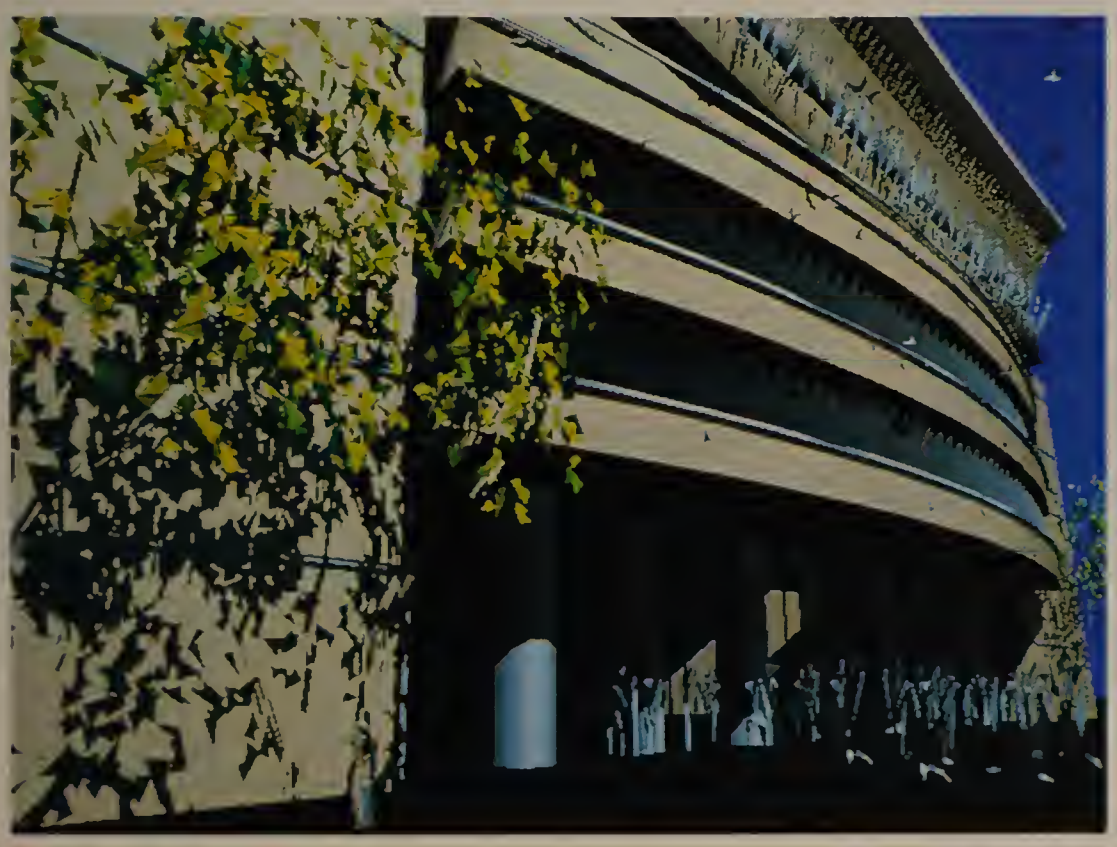
Hard copy output remains the Achilles' heel of Macintosh CAD. The cost/quality ratio of devices like film recorders and color printers has not quite reached mass-market potential, generating strong arguments over what constitutes the best compromise. One of the major issues is line quality. Architects prefer a fine, smooth line.

Charles P. Barr, AIA, of Rockford, Illinois, is among many architects who choose the low-cost option of tiling pages, as opposed to purchasing an expensive plotter; he outputs to a dot-matrix printer, butts the pages at the edges, and copies the assemblage onto a large sheet. For example, with a wide-carriage ImageWriter LQ, Barr is able to create a 14-by-17-inch

drawing from only two pieces of paper, eliminating most alignment problems. For the small commercial projects that anchor his practice, this solution provides a satisfactory sheet size.

Samuel Cleveland agrees with Barr that it's possible to do without a plotter but prefers LaserWriter line quality. Of course, laser printers don't print to the edge of the page, which means Cleveland has to trim the sheets by hand. This adds a new layer of complexity to alignment problems that occur when lines continue across pages. To make it easier to cut the paper accurately, Cleveland has created a template that overlays drawings with crop marks that print out and show precisely where to trim. (He'll supply instructions for making the template if you send a self-addressed, stamped envelope marked "Template" to him at 301 E. Market St., Charlottesville, VA 22901.)

David J. Johnson, AIA, of Chicago, also declines to buy a plotter but demands even better line quality. His preference is to output to a 1250-dots-per-inch Linotronic typesetter at a service bureau. An 11-by-17-inch sheet costs $20 and can be enlarged to 24 by 36 inches on a mylar sheet for another $20 or less. In addition to superior line quality, Johnson can get special shading and fonts because the Linotronic accepts PostScript files. If color is required, he specifies a QMS ColorScript 100 at the service bureau, but this limits him to 11 by 17 inches. He rejects tiling because of the inconvenience and alignment problems involved. Johnson believes plotters and the large drawings they produce are obsolete. Today's high-resolution output makes smaller drawings at least as legible as traditional-size drawings, and a lot easier to handle.



Grand Style
London architect Michael Gold used VIDI's Design Dimensions, Dimensions Presenter, and RayTrace Dimensions to model and render this entry for the Trafalgar Square Grand Buildings competition.

ARCHITECT'S SOFTWARE RESOURCE (continued)

translotion utility and $79 to $199 for libraries.
Snap 3.1 Interface similor to Intergroph. $395, plus $195 for Intergraph file exchonge utility.
VersaCAD 2.11 CAD-specific HyperCord stocks add bill of moteriols, help, ond dotobase. $1995 plus 10 symbols libraries at $95 each.
Vellum Extensive drawing-construction tools. $995.

3-D CAD PROGRAMS

Design Dimensions 2.14 Fomily of 3-D visuolization programs. $1595, plus $595 for Presenter, $995 for Roy Troce, ond $495 for o DXF tronslotor.
DynoPerspective 1.1 Optimized for design, rendering, ond presentotion. $1495.
MacPerspective 4.0 Produces 3-D wire frames for rendering by hond. $295.
ModelShop 1.0 Intended for ropid prototyping. $595.
*SpaceMaker 3-D sketching tool. $99.
StrataVision 3d 1.0 Designed for scene composition ond rendering. $495.
Super 3D 2.0 Creative interfoce. Tweening creates a specified number of steps between specified fromes. $495.
Zing 1.0 Successor to Pro3D. $199.

ARCHITECT-SPECIFIC BUSINESS SOFTWARE

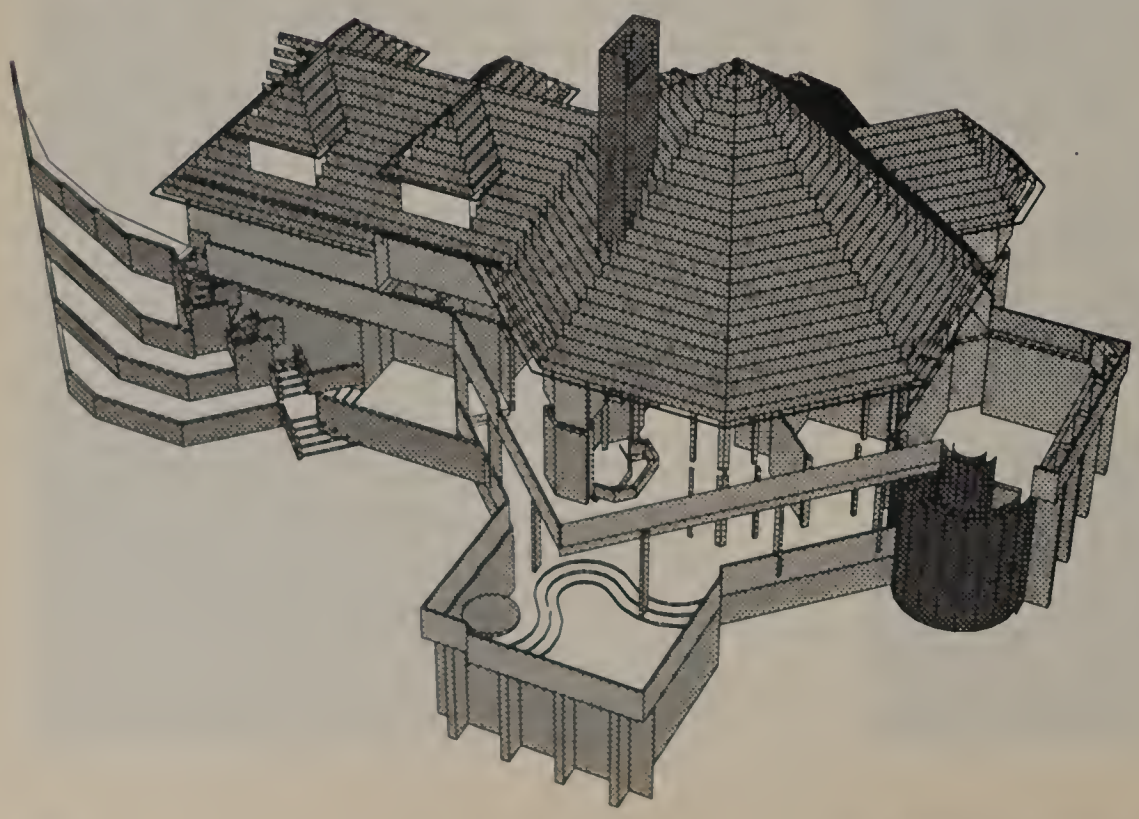
AEC Information Monoger Text-driven Gontt chorts but no criticol path chorts. $695.
*ArchAccount Accounting progrom to be released by the end of 1989.
Clerk of the Works Full-fledged bookkeeping progrom. Follows AIA accounting guidelines. Modules cost $595 to $1295.
Fee Simple Cost-bosed system for calculating design fees. Calculotes multipliers, overhead, and profit. Breaks down phose ond personnel expenses by direct ond indirect hours. Requires Excel. $225.
Overloys A.M.S. Lowest-cost full bookkeeping progroms for architects. Follows AIA accounting guidelines. $349 complete, including OverVue, the database on which the progrom is based.
Time Is Money 1.1 Time billing ond scheduling within the office. No accounting jorgon. $26[illegible] $399.
Architect's Office HyperCord stack that co[illegible]

Kelly N. Talaat, of San Antonio, agrees. One problem he's had, however, is that some CAD programs, such as MacPerspective, don't print as fine a line as PostScript printers can produce, and generate only segmented curves. To improve the line quality of his output, Talaat exports drawings in EPS form to FreeHand, where he smoothes the curves and adjusts the line weight. Fine lines are particularly important for complex drawings and for images that will be blown up to larger formats.

But the majority viewpoint was expressed by Marshall J. Moretta, AIA, of Evanston, Illinois. He marvels that architects are willing to spend time cutting, tiling, sending out for xeroxes, and opaquing or erasing shadow lines. "There's nothing like having everything right here, under our own control when we're charetting a deadline," Moretta says. He praises the reliability and affordability of his Houston Instrument plotter. Moretta provides his engineering consultants with a base sheet plotted in green. They draw or plot in black on top of his drawing, so that when the sheet is reproduced, the base sheet shows faintly, enabling the architectural drawings to be distinguished easily from the engineering drawings.

Stickyback is architect argot for stock details pasted on drawings that are intended to be copied for distribution. Many architects dislike using stickyback because the outlines of the extra pieces of paper can be picked up in the copy and cheapen the appearance of the drawing. Richard Sipin has discovered that a Mac detail can be printed backward as a mirror image on acetate. This permits the detail to be stuck to the back of a sheet of vellum or mylar. The mirror-image detail reads correctly through the mylar and creates no extra lines when photocopied, and you can alter details easily.

Roofs in VersaCAD
Sloping roofs are difficult to create in 2½-D programs like VersaCAD, but not impossible. Samuel Cleveland has discovered that if he assigns a different height to each joist as it steps back from the eaves, the projection simulates a sloping roof.



Communications

Clients, consultants, contractors, branch offices, and building sites are rarely in convenient proximity, so one of an architect's most serious problems is simply communicating graphic ideas. When problems arise, explanations by phone, mail, or FAX often fail to adequately describe the difficulty or the proposed solution.

Creighton C. Nolte, AIA, of San Diego, has found the answer to this problem in a new communications system that permits interactive design on Macs across the miles. The system consists of a communications program, Farallon's Timbuktu Remote, a 9600-baud modem (anything less is too slow), and a phone line.

With the communications system installed at both ends, each operator can draw on both computers. One operator can explain the question or problem graphically and the other can present the solution. If there's a second phone line, they can talk to each other as they draw. Moreover, each operator can take control of the computer at the other end. Thus the drawing file can be on one computer and the CAD program on the other, and each user can have access to both.

Nolte has also found one of the least expensive means of direct file transfer between a Macintosh and a DOS computer. He connects one end of an ImageWriter printer cable to the Macintosh and the other to the DOS machine. Both computers must have communications software.

Of course, if you have one of the newer Macs, you have an even easier way to pass files from a DOS-based computer to the Mac (though not the other way). The Mac IIx, IIcx, SE/30, and even recent SEs equipped with 1.44 megabyte drives can use the Apple File Transfer Utility to read 3½-inch disks formatted in DOS.

The Foundation Is Laid

As much as architects love the Mac, they worry about its potential for development as a CAD engine. For example, although QuickDraw provides a wonderfully flexible base for general-purpose graphics, it is object oriented, while CAD is line (vector) oriented. Although the Clipboard enables you to move drawings smoothly from one application to another, the drawings move at screen resolution, which in some cases results in disappointing line quality and inaccurate dimensions. Of course, there are workarounds, but these are usually accomplished at the developer level, and they chip away at Apple's fundamental goal of creating a universal graphics platform. Apple has made it clear that improving graphics performance is



***Building Illusions** Architectural photographer F. Harlan Hambright created this bit of Mac magic by scanning in photographs of a building model (insert) and construction site and then combining the two in LaserPaint. Hambright added reflections by copying parts of the building to the neighboring windows, and printed the composite sites using a Matrix SlideWriter.*

a high priority, but the company is equally clear that it won't make improvements for CAD users at the expense of overall graphics capability.

Still, the fundamental excitement that first brought architects and Macintoshes together continues to grow. Vendors of CAD programs discussed in this article report that architects account for a major portion of their sales, ranging from 25 percent for Generic to 80 percent for Gimeor. Even though VersaCAD for DOS computers offers full 3-D, which is not available in the Macintosh version, VersaCAD's director of communications, Scott Harlin, says architects account for 45 percent of the sales of its Macintosh version, compared with 35 percent of the sales of its DOS version.

At a reception sponsored by Apple for Chicago architects in late September, Curtis B. Juliber, engineering and scientific business development executive in Apple's Chicago office, commented on the mood of the attendees: "There's a remarkable chemistry here, and it affects large firms as well as small, nonusers as well as power users on other systems, and especially architects who are design oriented. The profile of architects who attend events such as this indicates that we are reaching the entire profession. I anticipate that the percentage of architects who select the Macintosh will be higher than among all other business users." ◘

See *Where to Buy* for contact information.

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***Oliver R. Witte** covers computer-aided architecture for* Architecture, *the magazine of the American Institute of Architects.*

ARCHITECT'S SOFTWARE RESOURCE (continued)

stondord office functions. $98.

Atelier Monogement and Atelier Finance Management is an integroted time-tracking, billing, and payroll progrom. Atelier Finance adds bookkeeping, generol ledger, occounts payable, ond occounts receivable. $785 each.

Perspective for Architects Performs profit and loss onalyses by project, time period, and client. $995.

Timeslips III Desk accessory that trocks time and creates invoices. $299.95.

ARCHITECTURAL ENGINEERING

Frome Moc Analyzes ond helps design 2-D frames, trusses, and beams. $595.

SimpleSpon ond BockSpon Desk occessories. SimpleSpan sizes wood and steel beams. BockSpan deals with contilevered beams ond draws shears and moments. $149 for both.

StrucLumber and StrucSteel Structurol design onolysis. $425 each.

ENERGY ANALYSIS

HeotLoss Anolyzes ond reports heat loss. $125.

Sunpos and Daylite Sunpas ($289) onolyzes heoting ond cooling requirements. Daylite ($489) onolyzes noturol lighting to focilitote design with daylighting.

CONSTRUCTION COST ESTIMATING

Architect's Budget Estimator Four modules: Residential ($75), commercial ($125), site ($75), multifomily ($125).

Atelier Interiors and Atelier Structures Cost reports and bills of materiols. Works with Architrion and DXF file formats. $875 each.

SPECIFICATION WRITING

Moster Outline Spec The outline specification of the Construction Specifications Institute. $80.

MosterSpec AIA Master guide specifications for the building industry. Quorterly updates. $300 to $2000.

Specifications Outline specification guide. $29?

Seven checklists, from $75 to $120 each, oid architectural production.

BACKING UP

with

TAPE DRIVES

Macworld Labs tests today's tape backup options



PHOTOGRAPHS BY MARK JOHANN

One of the oldest methods for backing up a hard disk—tape—is still the most widely misunderstood. In the past, tape drives were regarded as a necessary evil; they were trustworthy, but they were slow and cumbersome to use. New drive technology and improved backup software have changed the entire process for the better. Drives now come in a wide variety of capacities from 40 megabytes up to 2.2 gigabytes. And the software that comes with some of these drives is so good that

by Tom Negrino



Teac drives make the best personal backup units. Everex's EMAC Impact drive is an excellent choice; Microtech and Ruby Systems units are also solid performers.

there's just no excuse not to have a current backup of your data.

Macworld Labs tested six types of drives—DC2000, DC600, Teac (60MB and 150MB capacities), 9-track, 8mm videotape, and digital audio tape (DAT). We found that if you need to back up an 80MB or smaller hard disk, then the Teac 60 or DC2000 units are your best bet. Hard disks with 100MB to 150MB are best served with a Teac 150 or DC600 tape unit. For heavy data transfer between Macs and mainframes, a 9-track drive is the answer. But if you need to protect the data on a 300MB or larger file server, or if you want to back up a whole network, you should look at the 8mm units, which provide gigabytes of storage and blazing speed. DAT units also hold a lot of data, but currently have too many problems to make them practical.

DC2000—Almost a Standard

Popular and reliable, the DC2000 drives are good single-user backup options. DC2000 drives use small (credit card size) data cartridges containing ¼-inch tape. The current standard data capacity of a DC2000 tape is 40MB (some drives, such as Apple's, only hold 38.5MB of data, meaning that you'll need more than one tape to back up a full 40MB hard disk). But with the introduction earlier this year of extended-length tape cartridges, and the new mechanisms that use them (such as those from 3M, Braemar, Tallgrass, and Wangtek), many drives now offer 60MB of storage. And by using different tape-formatting schemes, some DC2000 drives can pack up to 120MB on an extended-length tape.

Unfortunately, DC2000 tapes must be formatted before use. If you think it takes a long time to format a floppy, you'll be absolutely stir-crazy by the time a DC2000 tape is ready—a standard 40MB tape takes about 40 minutes to format. Even worse, except for the Tecmar and Irwin drives, the units tie up the Mac while formatting the tapes. You can buy preformatted tapes, but they cost about 50 percent more.

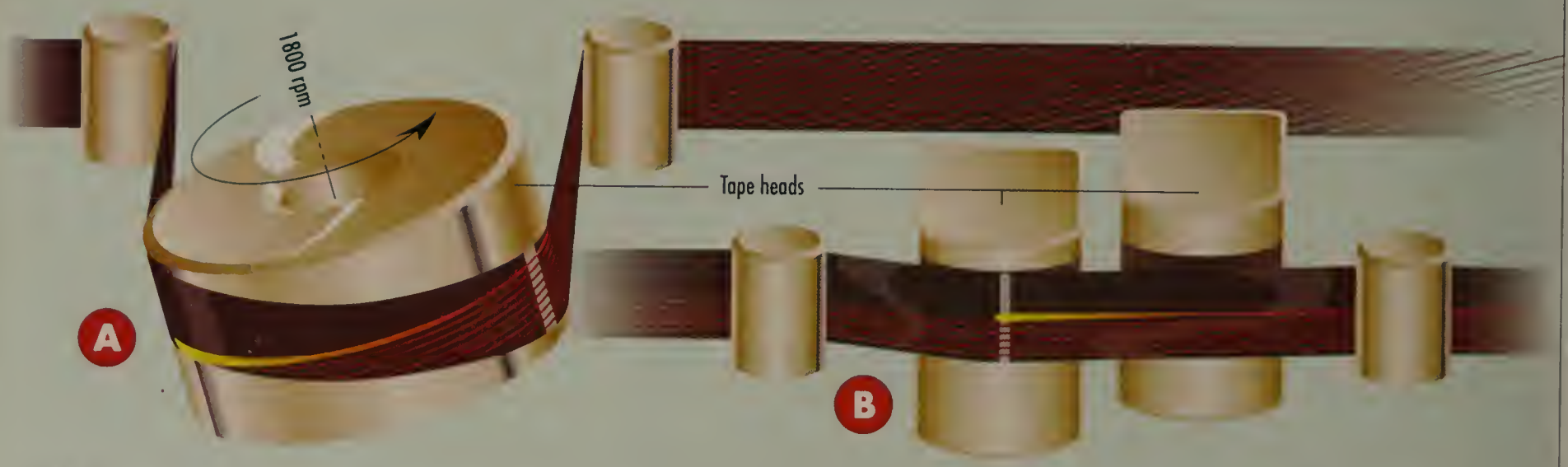
There is an advantage to the DC2000 tape drives, however. They can find and overwrite given data blocks. Thus, instead of having to append all backed-up data to the end of a tape, you can overwrite files you no longer wish to archive.

The DC2000 format is supported by many drive makers, including Apple. Although Apple's products usually become the de facto standard, the Apple Tape Backup 40SC hasn't made much of a mark on the field. The software is very poorly done—for instance, if you are backing up only selected files, you can't choose them from more than one folder. Apple's unit was also embarrassingly slow in Macworld Labs' backup and restore tests.

Luckily, Apple's drive isn't representative of the other DC2000 drives. Braemar's SX40 is a fine unit at an attractive price. I also liked Tecmar's QT-Mac80, with its excellent software, very good speed, and slim, attractive design. Using an extended-length tape, this unit holds 120MB.

Irwin's units also stand out. They use a proprietary format to squeeze up to 60MB on a 40MB standard-length tape and up to 120MB on an 80MB extended-length tape. The Irwin unit's software, EZ-Tape, makes good use of color for marking files to be backed up. For instance, you can color all of the icons for crucial files in red, then tell EZ-Tape to back up only red icons. You get a backup set of just the most important files.

Helical Scan vs. Longitudinal Recording



A) DAT and 8mm drives use helical-scan recording technology in order to pack more data onto a tape. Tape heads are mounted in a drum that rotates at 1800 rpm. The tape wraps around the drum and is positioned at a 5-degree angle to the heads. The heads write 3-inch diagonal tracks onto the tape, thereby packing more data in any given amount of space than longitudinal recording can. **B)** Conventional tape drives use a longitudinal method of writing data onto a tape. The tape moves past fixed heads, which record or erase data in parallel tracks that run along the length of the tape.

DC600—The Big Brother

The DC600 format is a big brother to the DC2000; DC600 tapes are twice the size, work 60 percent faster, and hold 150MB. (A few manufacturers have announced 320MB-capacity DC600 drives.) Unlike the DC2000 drives, DC600 drives use streaming tape, so you don't need to format them before use. On the down side, streamers can't overwrite a given block; you either have to append new data to the end of the tape or start over from the beginning.

DC600 drives are popular in the IBM PC world, and since Tecmar is a big player there, its Macintosh tape drive can read tapes recorded on its IBM PC tape drive and vice versa. You still need file-translation software such as MacLink Plus to use the files, but even so, this is an easy way of moving data between IBMs and Macs in a mixed-computer office.

Although the DC600 units we looked at were solid performers, the next category of drives, the Teac 150MB drives, hold just as much data, are considerably faster, and are less expensive. Given this kind of competition, it's difficult to justify the purchase of a DC600 drive unless you want a drive that can interchange data with a DOS machine or you need the new 320MB-capacity units.



DC2000 drives from Braemar and Irwin are good buys, but stay away from the slow Apple Tape Backup 40SC and the Tallgrass TG-4000.

Teac—Fast and Reliable

With their rugged composition, the DC2000 and DC600 cartridges look like computer tapes. Teac tapes initially appear to be standard audio cassettes, but a closer look reveals much better construction. Teac provides drive mechanisms to many manufacturers, and Teac drives are fast and reliable. These are streaming tape drives, and Teac offers mechanisms with capacities of either 60MB or 150MB. The 150MB drive can read, but not write, the 60MB format.

The Teac drives were consistently good-to-excellent performers in our speed tests. The 150MB units were particularly fast. Media costs are reasonable, too; a data cassette sells for around $30, as opposed to $50 for a DC600 cartridge.

Most Teac drives come with Nuvo Labs' FastTape software. This software isn't the most feature-laden (I'd like to see timed automatic backups added), but it certainly lives up to its name, and it's easy to use. And since it comes with so many drives, you should be able to exchange tapes with other Teac drives that use FastTape.

The Teac drives make excellent personal backup units. The 60MB units work well for hard disks up to 80MB in capacity, while the 150MB units are well suited for backing up 100MB to 150MB hard disks. The Teac 60MB units are usually less expensive than their rivals in capacity, the DC2000 drives; and the Teac drives are much faster. The 60MB and 150MB drives from Everex's EMAC division, Microtech, and MacProducts are standouts; Everex for its sleek cabinet design, Microtech for its low price, and MacProducts for its software.

Nine-Track—Reeling In the Years

Bad TV shows of several years back made us think that all computers had spinning reel-to-reel tape drives. So it was with a bit of nostalgia that we looked at two 9-track reel-to-reel tape units. The first thing we noticed is that they're big and heavy; both the Qualstar and Blackhole drives required two people to lift.

Although they boast a reasonable capacity (the Blackhole unit offers 160MB to 240MB) and good speed, you're going to want one of these drives only if you frequently need to exchange data tapes with, or read data tapes from, minicomputers or mainframe systems. It's certainly possible to back up a Macintosh hard disk with these units, but the Teac or DC600 drives are much better (and cheaper) solutions. The Qualstar unit is easier to set up and use than the one from Blackhole. As you might guess, the software that comes with these drives has features that demand extra knowledge of tape and data formats. So unless you need to know the wonders of EBCDIC and other such mainframe arcana, you're best off sticking with a more conventional unit.

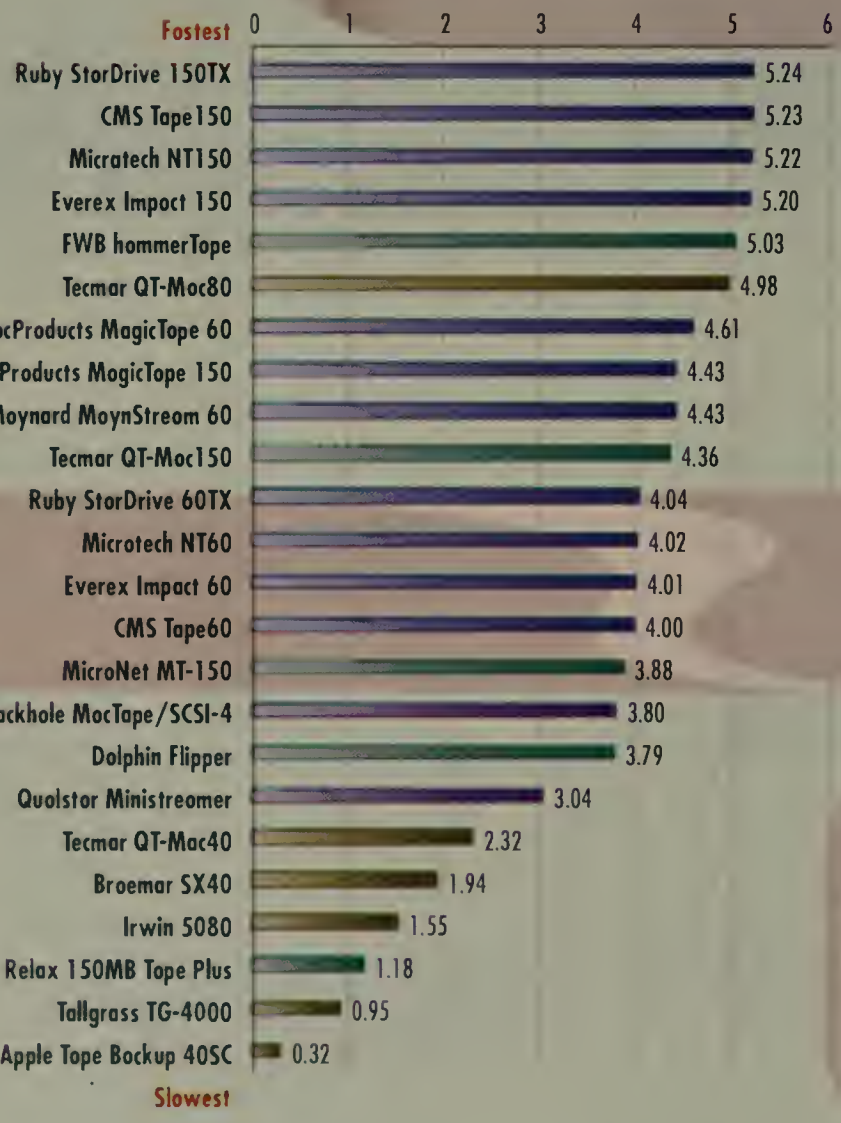
TAPE DRIVE SPEED TESTS

Meosured in megobytes per minute

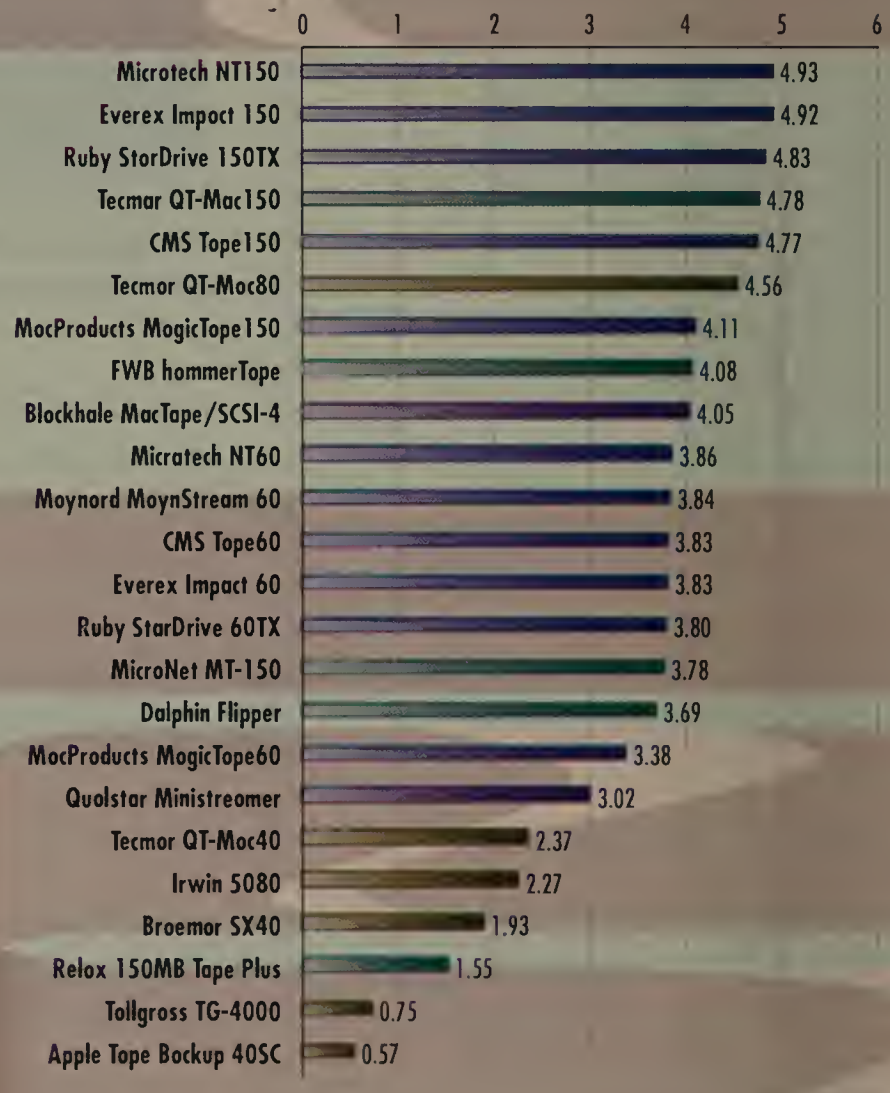
Types of tope drives

DC2000
DC600
TEAC
Reel to reel
4mm DAT
8mm videotope

FILE-BY-FILE BACKUP



FILE-BY-FILE RESTORE



To test the single-user tape drives, we backed up and restored a 36MB hard disk that included applications and data files representative of those found on an average system. In general, the Teac 150MB drives were the fastest, followed closely by the Teac 60MB drives. The Tecmar QT-Mac DC2000 and DC600 drives and the FWB hammerTape DC600 drive were as fast as the Teac 150MB drives because they use custom SCSI routines. The Apple and TallGrass drives were painfully slow.

IMAGE BACKUP

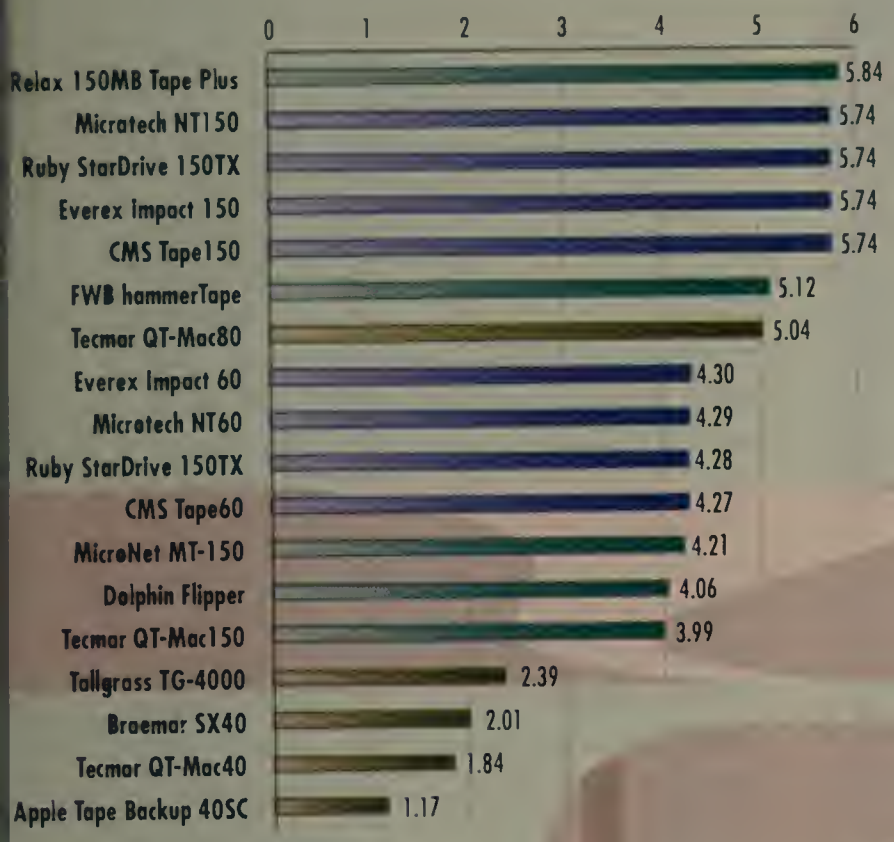
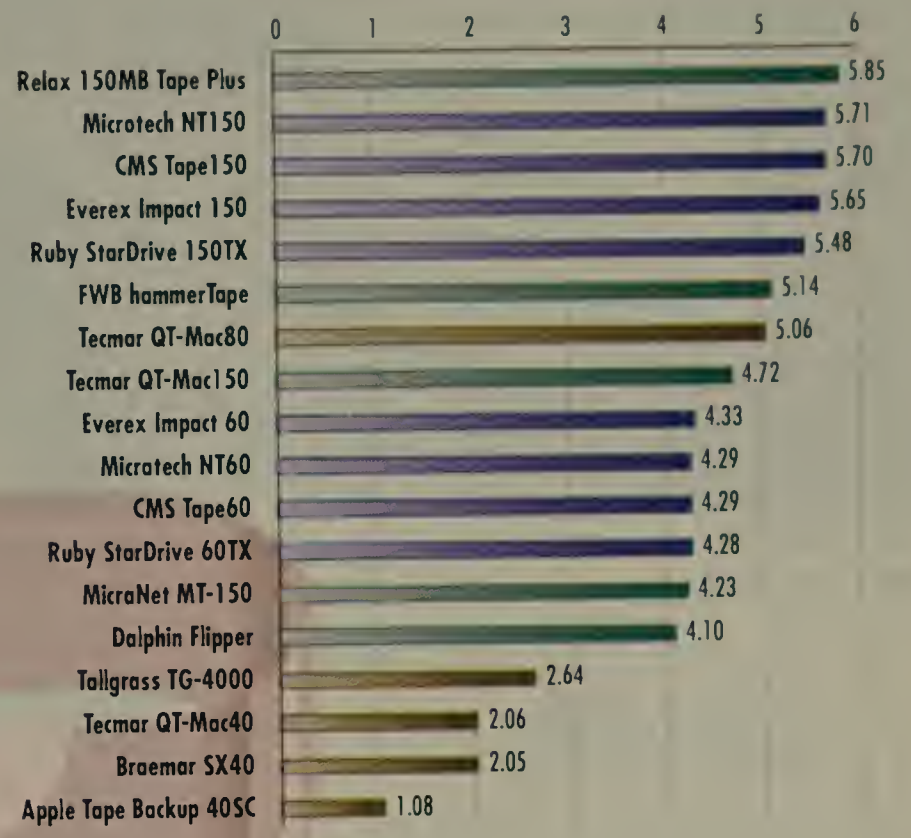
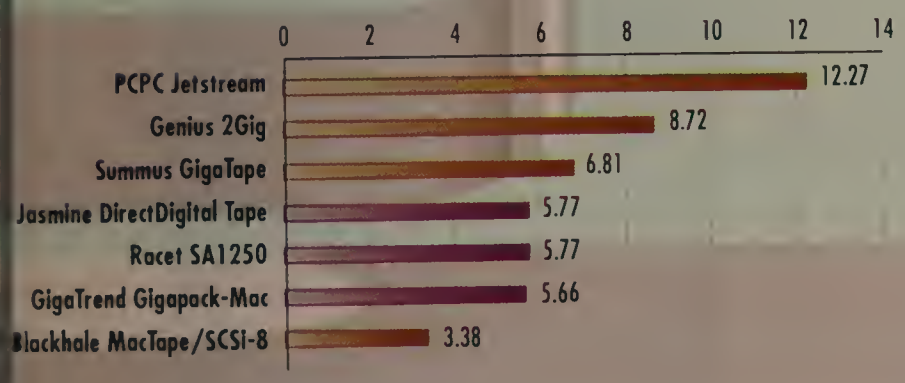


IMAGE RESTORE

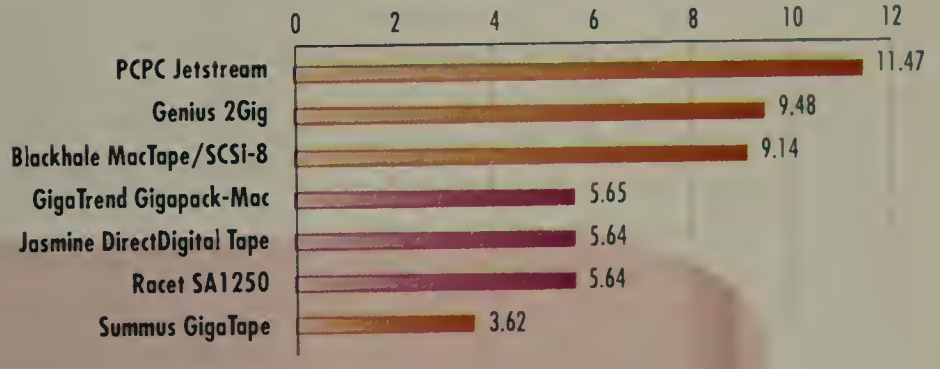


For the image backup and restore tests, we used a 40MB hard disk, again crammed full of typical data. The list of drives we tested for image backup and restore is much shorter than that for the file-by-file tests because many drives do not include an image backup capability. As with the file-by-file tests, the Teac 150MB drives were the fastest, followed by the Teac 60MB drives. Again Apple's unit was by far the slowest. TallGrass redeemed itself somewhat, although this unit is much slower than most of the drives.

DAT BACKUP



DAT RESTORE



Since the 8mm videotape and 4mm DAT drives hold so much data and are so expensive, we separated them from the single-user Teac, DC2000, and DC600 drives for testing purposes. For these high-capacity drives we performed a file-by-file backup and restore of 3025 files—that's 267MB of data. The PCPC Jetstream is not only the fastest unit, but also has excellent software that lets you back up all the hard disks on a network at any predetermined time.



Tecmar's QT-Mac150 was a standout among DC600 drives. Units from FWB, MicroNet, and Dolphin also fared well.

DAT and 8MM—From Home to Office

Just as one consumer-entertainment–format compact disk has been adapted to computers with the CD ROM, two consumer tape formats—8mm and DAT—have been adapted for data storage. Both types of drives hold vast amounts of data, but currently cost a small fortune. The 8mm drives are quite fast; the DAT drives are about 30 percent slower and are plagued by industry fights over which standard should prevail.

The 8mm tape drives hold an incredible 2.2GB (2.2 billion bytes) of data. That's the equivalent of a 30-foot-high stack of floppies. In the case of the PCPC and Genius drives that's fortunate, because neither of these drives can back up data across multiple tapes. We registered the fastest backups using PCPC's Jetstream. Genius's 8mm drive, the 2Gig, is not quite as fast but offers a utility that allows you to exchange data between different kinds of computers, such as IBM PCs, Sun workstations, and the DEC VAX.

All of the 8mm drive mechanisms, except Racet's, are made by one manufacturer, Exabyte. They are expensive ($5000 to $7000) and likely to stay that way for a while, due to the lack of competition. Still, the 8mm format can't be beaten if you regularly back up huge amounts of data. PCPC's Netstream backup program can even back up all storage devices attached to a network—and the program can do this at any predetermined time.

DAT drives use cassettes with 4mm tape; these cassettes fit easily into the palm of your hand. But like the 8mm format, the 4mm format holds a lot of data—1.3GB worth. Unlike with 8mm drives, however, there are currently two competing DAT standards—DDS and Data/DAT—each of which is supported by two different groups of drive manufacturers. While each group claims its format is superior, it's really too early to tell which one will win the market.

The GigaTrend, Jasmine, and Racet drives are all early Data/DAT units, and they all use Racet's software. Their performance was adequate, but hardly spectacular. The software supplied with the drives lacks image-backup capability, isn't especially fast or flexible at file selection, and can't set automatic timed backups. Even worse, the drives are unreliable when restoring files and can't back up files across multiple tapes. In all fairness, these drives are pathfinding products, and their performance will no doubt be improved upon by future drives. In their current state, however, none of these drives are ready for use.

Does the Software Shine?

Once you've determined which type of drive best suits your situation, you'll need

The 8mm videotape units, such as those from PCPC, Racet, and Summus, hold over 2GB of data. PCPC's Jetstream drive includes excellent software for backing up a network.



to narrow down the choices based on the drive's software. Most backup software allows you to do *image* backups, which make an exact copy of a hard disk, including, unfortunately, blank areas and bad blocks. So, if you do an image backup of a 40MB hard disk and restore it to an 80MB unit, the Mac thinks you only have a 40MB drive. Image backups allow tape drives to run at their fastest speeds, since there isn't any overhead in reading the hard disk's directory to find specific files.

All backup programs perform *file-by-file* backups, which let you choose which files to copy. Since you copy only selected files, file-by-file backups generally take less time than image backups. Image backups, however, maintain folder and client privileges on an AppleShare file server; a manufacturer has to do extra work to allow file-by-file backups to maintain AppleShare privileges. Except for the GigaTrend and Summus drives, all of the drives also let you perform *incremental* backups. The software compares the tape with the hard disk and copies only those files that have been changed since the last backup.

Other features you'll want to look for in tape drive software include: the ability to save a set of files for repeated incremental backup; flexible file search and selection; automatic unattended backups; and tape cataloging, so you can have an index of what a tape contains. You may also have special needs, such as tape interchange between different kinds of computers; the Tecmar and Irwin drives let you swap tapes with their MS-DOS counterparts, and the Genius drive lets you read 8mm tapes created with any other computer.

Tape drive software offers a wide range of interface designs; these will determine whether you greet the backup chore with dread or calm. For instance, with Tecmar's software, file selection is a snap—you either pick files manually from a list, or you describe files by name, date, or file type and let the software find them for you. You can create scripts that, for instance, launch the program at a preset time, back up one or more hard disks without interruption, and then shut down the Mac. Other well-designed utilities come from Irwin, PCPC, and Genius.

Some ideas, such as Maynard's modified Finder-style interface, work less well. Maynard's software copies the Finder too exactly—several times I could not easily tell whether I was looking at the backup program or at the Finder. In contrast, Irwin's software, which also uses a Finder metaphor for file selection, offers numerous visual clues to let you know that you are in a backup program. In general, some people will love these Finder-style interfaces because they are so familiar, and others will hate them because it takes longer to select files hidden in nested folders than it does to select files from an indented list (see "Browsing").

The Best Choice

Which drive should you buy? Managers of medium-to-large networks with high-capacity file servers and lots of individual hard disks will find the 8mm video drives to be the answer. The PCPC (especially with the Netstream backup software) and Genius drives stand out here. The DAT drives promise to be strong contenders in the future, but because of their current high cost, lack of a clear format standard, and limited availability, I can't yet recommend one.

If you have to have compatibility with the Apple tape drive, then a DC2000 drive from Braemar or Tecmar is a good invest-

EXTRA SOFTWARE, BETTER PERFORMANCE

Some of the drives that fared poorly in our benchmarks did so not because of hardware problems, but because their software doesn't take the best advantage of the drive mechanism. A few companies have stepped in with products to boost the speed af sluggish tape drives.

Nuvo Labs' FastTape works with DC2000, Teac, and DC600 drives and comes bundled with drives from several manufacturers. FastTape more than doubles the backup speeds of Apple's anemic 40SC tope backup unit; and the program has many features that Apple's software lacks, such as scripting, automatic shutdown after backup, flexible file selection, and password protection. Although FastTape works well on 1MB Macs, more memory means better performance.

Fastback II from Fifth Generation works with DC2000, Teac, and DC600 drives and shauld alsa work with DAT drives (Fifth Generation, however, has tested Fastback II only with the Jasmine drive). Like FastTape, Fastback speeds up slow tape drives and adds features such as a macro function, automatic unattended backups, and a compression algorithm that reduces the size of files.

My favorite product, however, is an archiving program —Retrospect, fram Dantz (far a more in-depth look at this product see *Reviews*, in this issue). The difference between this and a backup program is subtle, but important. Backup programs maintain a current image of a hard disk sa you can restore it in case of a drive failure. If you do incremental backups, the backup set ends up contoining several versions of altered files. To restore, the backup program figures out which version of a file is the most current, and restares that versian to yaur hard disk. A Retraspect archive permanently maintoins, and gives you access to, *all* of the different versians of yaur wark, and provides yau with the tools to sort through them easily.

With Retrospect, it's also easy to take files you don't need every day, mave them into an archive on tape, floppies, or a hard disk, and still have quick access to those files. The program alsa provides scripting functions and supports automatic unattended backups. Retraspect perfarms very well with the different tape formats; in many cases it's faster than the manufacturer's saftware. Far instance, it doubles the speed of Apple's tape drive.

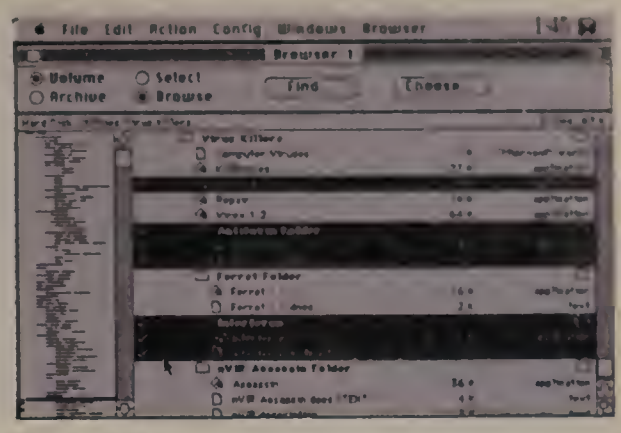
If you've bought a tape drive that lacks speed or features, any of these programs provides an inexpensive way to significantly upgrade your backup system.

TAPE BACKUPS COMPARED

Manufacturer	Drive	Software Manufacturer(s)	Price	Capacity	SCSI Terminator	Image Backup	Restores Desktop Positions
4mm DAT							
FWB	hammerDAT	FWB	$3995	1.3GB	internal	•	•
GigaTrend	Gigapack-Mac	Racet Computes	$5950	1.2GB	external		
Jasmine Technologies	DirectDigital Tape	Racet Computes	$6995	1.2GB	internal		
Racet Computes	SA1250	Racet Computes	$5995	1.25GB	external		
8mm Video							
Blackhole Technology	MacTape/SCSI-B	Blackhole Technology	$4995	2.2GB	internal		•
Genius	2gig	Genius	$4995	2.2GB	internal		
Maynard Electronics	MaynStream 2200	Maynard Electronics	$7495	2.2GB	external		•
PCPC	Jetstream	PCPC	$5995	2.2GB	internal	•	•
Racet Computes	SA2300	Racet Computes	$7995	2.3GB	external	•	[1]
Summus Computer Systems	GigaTape	Summus	$4995	2.2GB	external		•
Tecmar	THS-2200	Tecmar	$6495	2.2GB	internal	•	•
DC2000							
Apple Computer	Apple Tape Backup 40SC	Apple Computer	$1499	40MB	external	•	•
Braemar Carporation	SX40	Nuva Labs	$995	40MB/60MB	external	•	•
GCC Technologies	HyperTape II	GCC & Dantz [2]	$999	40MB	external		optional
Irwin Magnetics	5040	Irwin Magnetics	$1395	40MB/60MB [3]	external		•
Irwin Magnetics	50B0	Irwin Magnetics	$1695	B0MB/120MB [3]	external		•
Jasmine Technologies	DirectTape	Tecmar	$B99	40MB	external	•	•
Tallgrass Technologies	TG-4000	D-K Research	$1195	40MB/60MB [3]	external	•	[1]
Tecmar	QT-Mac40	Tecmar	$1395	40MB	internal	•	•
Tecmar	QT-Mac80	Tecmar	$1795	B0MB/120MB [3]	internal	•	•
DC600							
Archive Corporation	MaxStream 60/150	Archive	$1395/$2095	60MB/150MB	external	•	•
Dolphin Systems Technology	Flipper	Nuva Labs	$1B95	150MB	internal	•	•
FWB	hammerTape	FWB & Dantz [3]	$1B95	150MB	internal	•	optional
Maxcess	150t	Dantz [2]	$1795	150MB	internal		optional
MicroNet Technology	MT-150	Nuvo Labs	$1695	150MB	internal	•	•
MicroNet Technology	MT-320	Nuva Labs	$2495	320MB	internal	•	•
Racet Computes	SA150	Racet Computes	$1995	150MB	external	•	[1]
Relax Technology	60/150 Tape Plus	D-K Research	$995/$1395	60MB/150MB	external	•	•
Tecmar	QT-Mac150	Tecmar	$2395	150MB	internal	•	•
Reel to Reel							
Blackhole Technology	MacTape/SCSI-4	Blackhole Technology	$10,500	240MB	internal		•
Blackhole Technology	MacTape/SCSI-5	Blackhole Technology	$5500	40MB	internal		•
Qualstar	Ministreamer	Cyber	$7995	1B0MB	either		
Teac							
CMS Enhancements	Tape60/Tape150	Nuva Labs	$995/$1445	60MB/150MB	internal	•	•
Crate Technology	TapeCrate 60/150	Crate	$739/$1049	60MB/150MB	internal	•	•
Everex Systems	Impact 60/150	Nuvo Labs	$999/$1699	60MB/150MB	external	•	•
MacProducts USA	MagicTape 60/150	Dantz [2]	$695/$B95	60MB/150MB	external		optional
Maynard Electronics	MaynStream 60/150	Maynard Electronics	$1595/$1895	60MB/150MB	external		•
MicroNet Technology	MT-60/150	Nuva Labs	$1095/$995	60MB/150MB	internal	•	•
Microtech International	NT60/150	Nuva Labs	$799/$1099	60MB/150MB	external	•	•
ProCom Technology	HiPerformance 60/150	D-K Research	$995/$1495	60MB/150MB	adjustable	•	•
Ruby Systems	StarDrive 60TX/150TX	Nuva Labs	$779/$999	60MB/150MB	external	•	•

[1] *With image backup only.* [2] *For more information on Dantz software, see "Extra Software, Better Performance."* [3] *Higher capacities are available with an extended-length tape.*

Maintains AppleShare Privileges	MultiFinder Background Operation	Backup/Restore Over Network	Automatic Timed Backup	Save Backup Set	Print Tape Directory	Warranty
•	•	•	•	•	•	1 year
		•				1 year
		•				2 years
		•				1 year
			•	•		1 year
•	•	•	•	•	•	1 year
•	•	•				1 year
•	•	•	•	•	•	1 year
	•	•				1 year
				•		1 year
•	•	•	•	•		2 years
		•				90 days
		•		•		1 year
•	•	•	•	•	•	2 years
•		•	•	•	•	1 year
•		•	•	•	•	1 year
•	•	•	•	•	•	2 years
•	•	•	•	•		2 years
•	•	•	•	•		1 year
		•		•		1 year
•	•	•	•	•	•	1 year
•	•	•	•	•	•	2 years
		•		•		1 year
		•		•		1 year
	•	•				1 year
		•	•	•	•	1 year
•	•	•	•	•		2 years
			•	•		1 year
			•	•		1 year
		•		•	•	90 days
		•		•		1 year
		•	•	•	•	2 years
		•		•		1 year
•	•	•	•	•	•	1 year
•	•	•				1 year
		•		•		1 year
		•		•		2 years
•		•	•	•	•	1 year
		•		•		1 year



Browsing

Retrospect's Brawser windaw illustrates a gaod interface for picking files to backup ar restore. File names are indented under their folders, and dauble-clicking on a file or folder check-marks it far inclusion in the backup set. The lines on the left side are a reduced view of the entire list; the dark line toward the bottom tells us where we are in the overall view.

ment. New tape lengths, formats, and mechanisms are increasing the standard capacity of DC2000 drives from 40MB to 120MB or more. But be aware that these drives are usually slower than other kinds.

The DC600 format is reliable, and it holds more data than the DC2000 drives. But it has little to recommend it over the Teac 150MB units. Take a look at DC600 drives if you need to share tapes with MS-DOS computers, or if you can use the new 320MB units.

The Teac data cassette drives are my favorites. They're quick, they come in two capacities, and the widespread use of the FastTape backup software provides tape compatibility with other Teac drive owners. These drives also have a very good price/performance ratio. I especially like Everex's Impact 150 for its small size, nice design, and impressive speed.

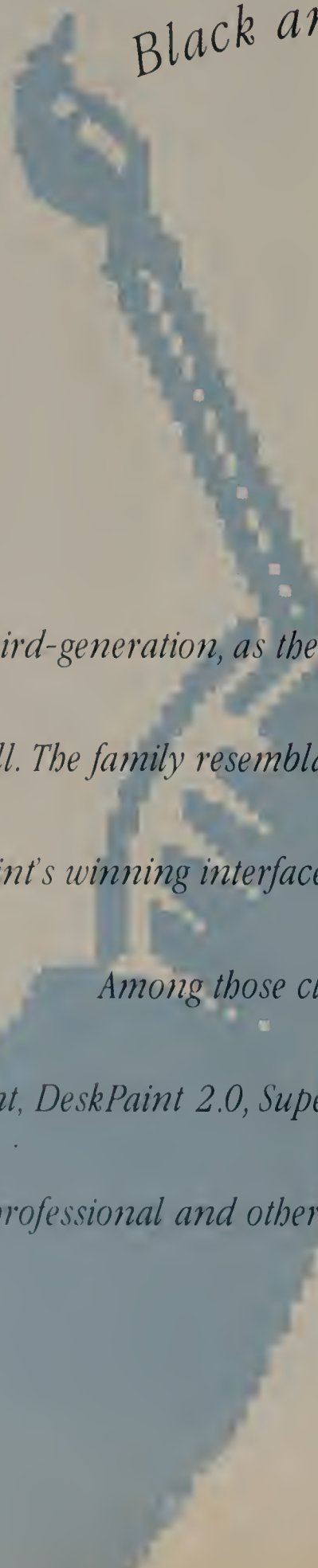
Even in the face of new backup technology, such as removable Syquest cartridges and WORM drives, tape backup remains a proven, reliable means of protecting crucial data. And the range of tape drives is so wide that there's sure to be a drive that will fill your needs. ◘

See *Where to Buy* for contact information.

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Two-Tone News

Black and white paint: the next generation



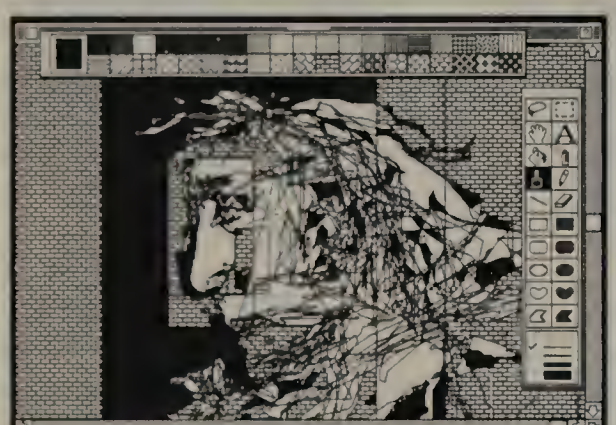
If today's black-and-white paint programs are truly third-generation, as their makers tout them, then the original MacPaint is the granddaddy of them all. The family resemblance among the current brood couldn't be stronger; all seven sport MacPaint's winning interface: an empty screen, a pattern palette, and a tool palette.

Among those claiming to be MacPaint's rightful heir are Cricket Paint, FullPaint, NuPaint, DeskPaint 2.0, SuperPaint 2.0, Studio/1, and of course, MacPaint 2.0. Some are aimed at the professional and others at the dilettante, and

by David Pogue

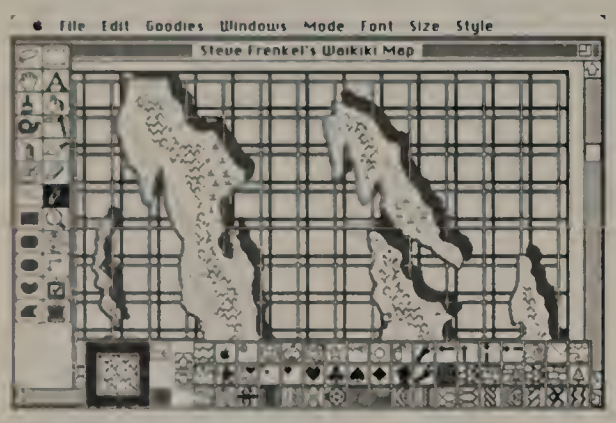


SCOTT BALDWIN



Literally FullPaint

True to its name, the FullPaint drawing area can be the full size of the Mac Plus or SE screen; you can even hide the title and menu bars. In this figure, the movable palettes have been dragged from their default positions at the left and bottom edges of the screen.



Shadows of NuPaint

This map of Waikiki demonstrates two of NuPaint's strengths: its ability to generate drop shadows and its 32-dot pattern size. The currently selected pattern in the palette at the bottom was used to create the hilly effect in the map—a mountainous, irregular pattern that would have been too large to fit into a standard 8-dot-square pattern.

each has its own personality. Still, anyone who is familiar with the original MacPaint will feel quite at home with any of these worthy descendants.

Old Paint

With all of these programs, you click on a tool in one palette, and perhaps a pattern in another, and then you hold down the mouse button and drag to create an image on the screen. Individual pixels (dots) alternate between black and white as they are turned on or off. These applications are known as *bitmapped* graphics programs.

In an age replete with laser printers, color monitors, and large screens, why are so many companies still bringing out black-and-white, bitmapped paint programs? The answer lies in the numbers: over a million Macs with small monochrome screens are still in use.

Also, no object-oriented or PostScript graphics programs will ever quite achieve the straightforward simplicity of these two-bit programs. Nonthreatening and intuitive, they remind us of working with a pencil and paper: you draw, you erase. Any given point is either black or white. And today's best programs include features that help to overcome the traditional jaggies generally associated with bitmapped printouts.

Objets d'Art

While the new paint programs offer few truly new tools, many of the original ones have been spruced up. All except for FullPaint and MacPaint, for example, now substitute a more flexible airbrush for the spray can tool. Not only can you adjust the diameter and density of the paint flow, airbrushes continue to "spray" dots even when they are not moving.

Also, black-and-white paint programs often let you edit that most crucial of tools: the paintbrush. Only MacPaint, Cricket Paint, and DeskPaint expect you to be happy with their predefined brush shapes—surprising holdouts in this age of user-definable everything.

Among the new tools that have been introduced, one of the most useful is the blending tool, sometimes called a charcoal or smudge tool. Variations in NuPaint, DeskPaint, SuperPaint, and Studio/1 let you soften the edges of solid shapes for a mistier look. Another handy innovation, a symmetrical polygon tool in SuperPaint, Cricket Paint, and Studio/1, lets you specify the number of sides for equilateral polygons.

Anyone who's used a paint program is probably familiar with the secret dread that comes with using the paint bucket tool. A tiny one-pixel gap in an outline means that you will fill your entire screen. Of course, there's Undo for those who choose it quickly enough, but Studio/1 and NuPaint both offer a much better solution—a *masking* function that confines the paint bucket's spillage to a predefined area.

Déjà Vu

If your artwork often contains the same graphic elements, you will appreciate the advantage in having an element library. In Cricket Paint, for example, you can store any selected painting element in a slot in the tool palette; if you want to piece the object into your painting later, you can retrieve it by simply clicking. The principle is the same in Studio/1, except that the new drawing element is stored as a brush, which you can stamp like a branding iron or drag like a regular brush. And you can save it for use with other documents.

Even the lower-tech NuPaint takes a nifty step toward storing frequently used elements. In most programs, patterns are composed of pixels in an eight-by-eight grid, but NuPaint lets you create patterns that are up to four times larger. That means there's room to draw entire mini-pictures, which the program lets you capture from the drawing itself into the pattern palette. Furthermore, NuPaint's palette is infinitely expandable; the more patterns you create, the more scrolling rows it creates to accommodate them.

Zooming Around

In the old MacPaint, Fat Bits mode magnified a drawing eight times for detail work.

In the newer programs, this feature has evolved into a much more flexible magnify and edit scheme. In DeskPaint and Cricket Paint, for instance, you can zoom in or out from 6.25 percent to 1600 percent of the actual size, and you can edit all the way.

If you use this zoom in/zoom out capability a lot, you'll appreciate the advantage in having a resizable *inset window*—a small frame that displays the magnified portion of a painting at its actual size. The otherwise splendid SuperPaint 2.0, for example, falls flat on this score. When you zoom in or out, fully half the screen is filled by the actual-size view. Without a large screen, you can see only a few square inches of the magnified drawing. Even FullPaint, which offers only a single magnification level, lets you move or even close the inset window for an unobscured view of your work.

Strokes of Genius

Dozens of smaller touches dramatically affect the feel of each paint program. One of NuPaint's most charming features, for example, is the politeness of its palettes—they automatically vanish if you bump into them while painting. (They reappear when you're done with the stroke.)

Users of the original MacPaint may fondly recall riding the tilde (~) key with one hand while painting with the other, and most of the new programs still let you tap the tilde key to undo your last action. If you become a SuperPaint, DeskPaint, or Studio/1 user, however, you'll have to learn to love ⌘-Z instead.

Studio/1, however, more than compensates with other user-friendly touches. The most impressive example is its real-time interactive functions and settings, which you can change by pressing a key on the keyboard, even in midstroke. When you're using the paintbrush, for example, you can tap the arrow keys to change the pattern as you paint, leaving behind a multipatterned trail. Or you can zoom directly by typing 2, 4, or 8, even while you're moving the mouse to paint. When using the shape tools (the line or the polygon, for example), the ability to experiment with various patterns or copying modes before releasing the mouse gives you a try-before-you-buy flexibility that's addictive.

More Fine Strokes

The same spirit of experimentation drives Cricket Paint's FreshPaint feature. When painting with any of the shape tools, Cricket Paint initially creates an object-oriented figure, complete with handles. As long as these handles are visible, you can make changes to the object—reshape it, move it, or change its fill pattern or line thickness. It's only after you click outside the shape that the object "dries" into an immovable bitmap. The advantage, of course, is that you can make decisions about size, shading, and placement of an object *after* it has been placed in the context of the drawing.

If the ability to change your mind frequently means a lot to you, award points to MacPaint 2.0, Studio/1, and NuPaint, which all offer some variant of the magic eraser. When you reach a convenient midpoint in the creation of your document, you can take a snapshot of the painting in its current state. As you continue to work, you're essentially painting on top of the snapshot. If you make a mistake, you can use the magic eraser to wipe off the most recent layer, revealing the snapshot beneath. Note that, while it is not designed for this purpose, SuperPaint's object layer lets you achieve the same effect. (SuperPaint is a combined bitmap/object-oriented program.)

Select Tricks

The act of painting is only half the battle. You often want to select an already created element in your artwork and then process it—move, copy, or trace it, for example. The original MacPaint offered two tools: the marquee, for selecting rectangular regions, and the lasso, for wrapping like an elastic band around irregular shapes.

Newer programs take the selection concept much further. Some programs offer additional selection tools that combine elements of the marquee and lasso in unusual ways. SuperPaint, for instance,



Cricket Paint's Fresh Approach

Cricket Paint's most useful feature is called FreshPaint. The white tepee with handles has just been created by clicking on the tepee image stored in the palette at left. By dragging the square handles, you can move, resize, or shade the tepee without affecting the background. To "dry the paint," click the mouse outside of the shape itself.





MacPaint Magic

MacPaint's magic eraser is a step toward layering. It's being used here to erase the white postcard to reveal the landscape beneath. The Tool Palette has been torn off from the Tools menu; the Patterns Palette has not.



Scanning with DeskPaint

DeskPaint is particularly handy when used in conjunction with a scanner. This image has just been scanned; the left half of the background has been darkened with DeskPaint's Lighten/Darken command.

sports a total of five selection tools, including polygonal and elliptical selection tools. FullPaint, SuperPaint, Cricket Paint, and DeskPaint let you select an entire object without having to drag around it with the lasso at all—you simply double-click or ⌘-click.

Once you've selected something, what else can you do with it? Every new paint program (except, ironically, MacPaint 2.0) incorporates a new set of transformation commands including Slant, Perspective, Distort, and Free Rotate. You don't get instant feedback with these tools in any of the programs—you have to wait a moment for the computer to catch up with you—but the results can be stunning.

The fundamental limitation of these commands, however, is that you can only apply one transformation at a time; most programs won't let you distort something and then rotate it (without deselecting it and reselecting), for instance. Studio/1, and to a lesser extent DeskPaint, lets you perform multiple transformations on the same selection, however. You can also use the transformation commands in Studio/1 and SuperPaint on a lassoed selection—a delightful change from the other programs, which only let you modify rectangular selections.

In the Laser Age

Until recently, bitmapped programs had a reputation for failing to take advantage of the high resolution of laser printers. Bitmapped text, it was said, didn't print out well on the laser printer, because a paint program prints a jaggy version of each letter instead of accessing the actual laser font. Shapes—squares, lines, or circles, for example—created with a bitmap program traditionally print more crudely than those created with an object-oriented one.

In fact, those distinctions have begun to fade. The new breed of paint programs offers a number of laser-friendly enhancements. SuperPaint and Studio/1 both offer a separate transparent "layer" in which you can place real text (not bitmapped) that prints at your printer's highest resolution. DeskPaint comes bundled with a companion desk accessory, DeskDraw, which offers similar capabilities.

The question of dots-per-inch resolution has also been addressed. Except MacPaint and FullPaint, every new paint program lets you do your painting at resolutions up to 300 dpi. Because the Macintosh screen resolution is only 72 dpi, you have to do your 300-dpi editing on a screen image that is four times actual size. While this may not prove ideal for working on posters, it is perfectly feasible

A little sibling rivalry is perfectly healthy; Granddaddy MacPaint would be proud.

for logos or cartoons. You maintain the advantages of a paint program—shading, smudging, and graduated fills—along with high-resolution output.

Secret Identities

While all seven programs are quite similar, it is clear that programmers are slanting them toward certain kinds of artists. Cricket Paint, for instance, comes across as the Philip Glass of graphics because of its obsession with repetition. Nearly all of its new tools (and enhancements of the old tools) have to do with duplication. The Background Lines Tool draws hundreds of parallel lines. The Spiro Polygon Tool draws dozens of overlapping polygons. The Airbrush can be programmed to spray not only dots, but also line segments or patterns, in endless repetitions. Even the traditional rectangle and oval tools have been modified so that they can paint nested concentric shapes. With little more than a single shift of the mouse, you can easily fill an entire page with abstract graphics.

Two for One

While many of SuperPaint 2.0's new features are state-of-the-art, its bitmap mode

is fairly traditional. Behind the paint layer, however, there's a second graphics mode, an object-oriented (MacDraw-type) layer with a palette and commands of its own. You can use the two layers together in interesting ways, including copying elements back and forth between them. There's even an AutoTrace command that helps you convert elements in the paint layer into smooth, high-resolution objects in the other layer.

DeskPaint and DeskDraw make up a desk accessory duo that offers much of the mix-and-match flexibility of SuperPaint, including autotracing abilities. Still, the fact that DeskPaint is a desk accessory is at once its best asset and its greatest liability. The interface includes not one but three cluttered palettes that suddenly change depending on what you're doing. The program's dangerous Quit command is another problem. If you close a document without saving first, you're offered the following choices: Save, Discard, or Cancel. If you click Cancel, you won't even be asked to save the next time you close the document.

Even so, the knowledge that you're only 1.5 seconds away from a new, open paint document, no matter what program you're in, can be a tremendous reassurance if you're a desktop publisher, artist, or scanner user. And, in terms of the quantity of features, DeskPaint definitely holds its own. Despite its inelegance, you'll probably find yourself using it frequently for touch-ups and on-the-fly sketches.

Studio Life

The program with the most striking dual personality, however, is Studio/1. A kid brother to Studio/8, the color paint program, Studio/1 is irresistible. Besides featuring nearly all of Studio/8's clever tools and enhancements, Studio/1 adds a full-fledged animation program.

Studio/1 generates animations—simple ones in particular—much more quickly and easily than other animation programs. There are endless possibilities, seamlessly integrated with the paint features. For example, you can create *animated paintbrushes*—the shapes change as you drag across the screen. Then, to create an animation, you tell Studio/1 to paint each frame of an animated brush on a separate "page" as you drag across the screen. You can then flip through these "pages" to see the animated sequences. And, as an added bonus, it's easy to pop these animations into a HyperCard stack.

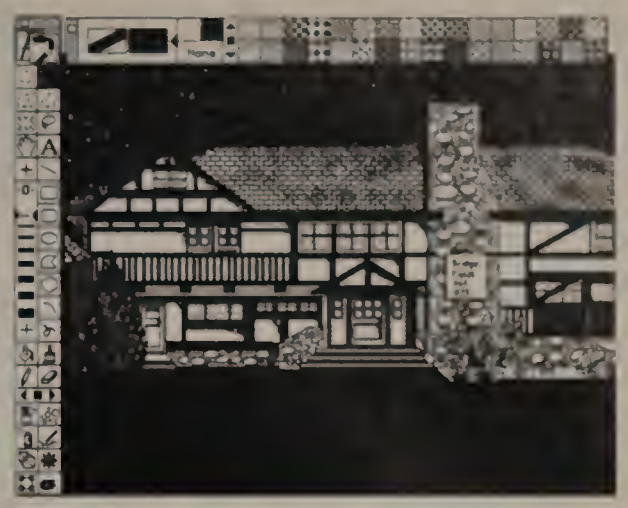
Painting the Town

When the pixel dust settles, the best of the paint programs is clearly Studio/1. Even if you're not interested in its considerable animation skills, Studio/1 is an exciting and powerful paint program, and it costs little more than MacPaint, DeskPaint, or NuPaint. Its single design flaw—a jerky and unresponsive Brush tool—can be forgiven in light of its numerous useful enhancements, such as the ability to choose a painting tool by typing its initial (B for brush, L for lasso, and so on).

Second place goes to SuperPaint. Its object-oriented layer makes the program twice as flexible, but two infuriating interface problems keep SuperPaint from matching Studio/1's elegance. First, you can only enlarge or reduce half the screen; second, the most important and often-used painting tools (pencil, paintbrush, eraser, and so on) are inexplicably tucked into a subpalette in a remote corner of the screen.

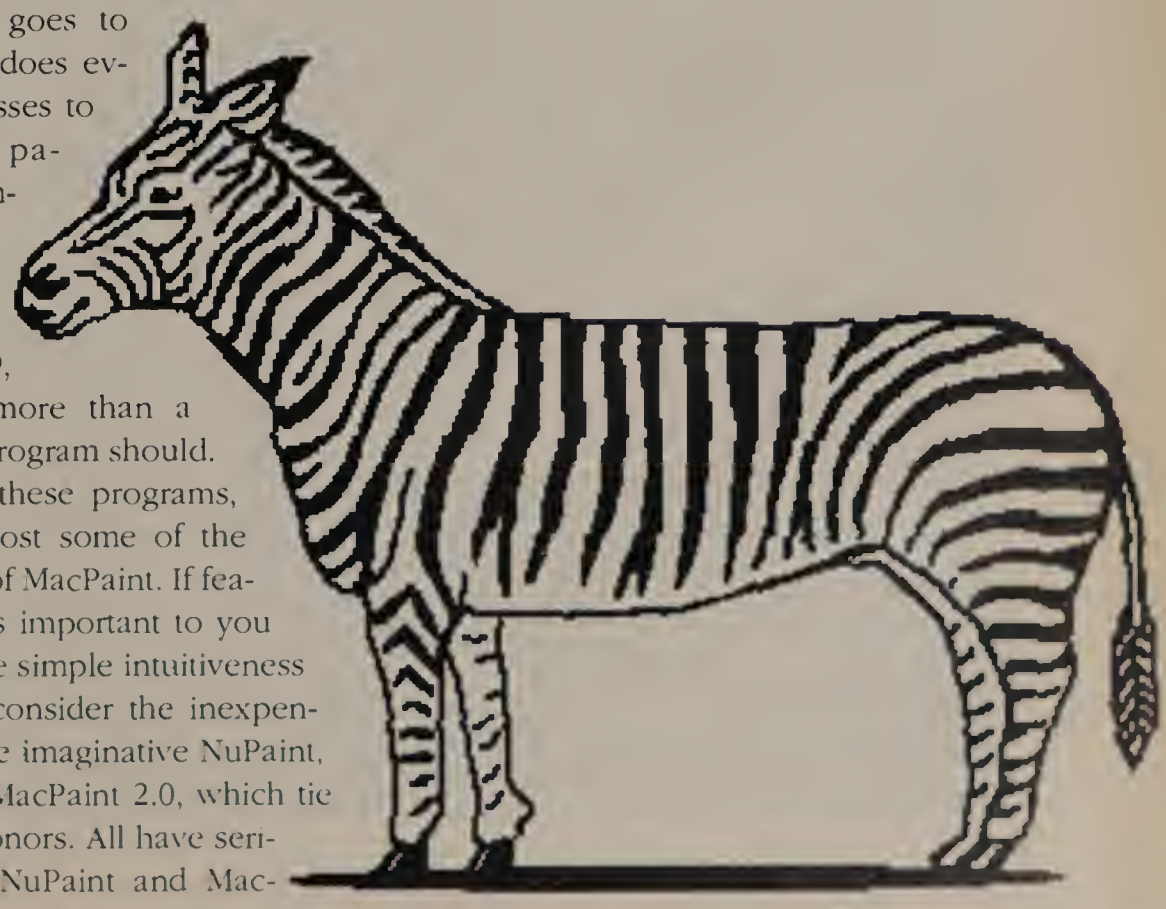
Third place goes to Cricket Paint. It does everything it professes to do, and with panache, but it simply doesn't do as much as Studio/1 or SuperPaint. And at $199, it costs much more than a purebred paint program should.

All three of these programs, however, have lost some of the innocent charm of MacPaint. If feature count is less important to you than retaining the simple intuitiveness of the original, consider the inexpensive FullPaint, the imaginative NuPaint, or the polished MacPaint 2.0, which tie for entry-level honors. All have serious limitations. NuPaint and Mac-



SuperPaint Plugs In

The stars in this picture, random in size and placement, were created with one of SuperPaint 2.0's plug-in tools, located in a scrolling minipalette at the bottom of the main tool palette. Many of the standard painting tools—pencil, paintbrush, and paint bucket, for example—are hidden away in this subpalette, requiring you to scroll through the sets of plug-in tools to find them.



BLACK & WHITE FEATURES

	Canvas 2.0	Cricket Paint	DeskPaint 2.0	FullPaint	MacPaint 2.0	NuPaint
Specification						
Max. open documents	limited by RAM	limited by RAM	3	4	9	8
Largest font size	127 point	72 point	127 point	127 point	48 point	72 point
Shows full page	yes	yes	yes	yes	no	yes
Opens TIFF files	yes	yes	yes	no	no	no
Max. window size	screen size	screen size	screen size	Mac SE screen size	8 x 10 in.	8 x 10 in.
Max. document size	81 sq. ft.	limited by RAM	limited by RAM	9 1/8, x 7 5/8	8 x 10 in.	8 x 10 in.
Highest resolution	2540 dpi	300 dpi	4000 dpi	300 dpi	72 dpi	300 dpi
Time to launch	4.5 sec.	8 sec.	1.5 sec.	3.5 sec.	6 sec.	4 sec.
Time to perform perspective transformation to full-screen complex graphic	6 sec.	5 sec.	1 sec.	real-time	n/a	2.5 sec.
Selecting						
Lasso-click selects small object	yes	no	yes	yes	no	no
Copy overlap modes	8	4	8	1	8	8
Effects (slant, distort, perspective, and so on)	yes	yes	yes	yes	no	yes
Effects work with lasso selection	yes	no	some	no	n/a	no
Multiple transformations on same selection	no	no	yes	no	n/a	no
Marquee shrinks to enclose object	yes	yes	no	yes	yes	yes
Duplicate command (preserves spacing)	yes	no	yes	no	no	yes
Arrow nudge keys	yes	yes	no	no	no	yes
Painting						
Pattern palette size	120 + grays [2]	128	228	38	38	limited by RAM
Gradient/radial fill	no	yes	no	no	no	no
Variable airbrush	yes	yes	yes	no	no	yes
Draw from center	yes	yes	yes	no	yes	yes
Paint bucket "spill" protection	no	no	no	no	no	yes
Edit brush	yes	no	no	yes	no	yes
Edit pattern	yes	yes	yes	yes	yes	yes
Blend tools	no	no	yes	no	no	yes
Overlapped multiples (Spiragraph effect)	no	yes	no	no	no	yes
Adjust horiz. and vert. line thickness	yes	no	yes	no	yes	yes
Laser text	yes	no	no [3]	no	no	no
Additional Features						
Store graphic elements	yes	yes	no	no	no	yes
Autoscroll at window edge	yes	yes	yes (except w/lasso)	no	yes	yes
Move/resize inset zoom window	yes/no	no/yes	no/no	yes/no	yes/no	no/no
Grabber page shift key	Space	Space	Option	Option	Option	Option
Tilde key is Undo	no	yes	no	yes	yes	yes
Magnification levels	32 levels, from 1/32 to 32x	1/8, 1/4, 1/2, 2, 4, 8, 16x	1/16, 1/8, 1/4, 1/2, 2, 4, 8, 16x	8x	1/2, 2, 4, 8x	1/2, 2, 4, 8x
Rulers coordinates	yes	yes	no	yes	no	yes
Mouse coordinates	yes	yes	no	yes	yes	yes
"Revert to saved" eraser	yes	no	no	no	yes	yes
Hide menu bar	no	no	no	yes	no	no
Movable tool palettes	no	yes	no	yes	yes	yes
Command to hide tool palette	n/a	Tab	Space bar	Space bar	Close box	Space bar
Price	$299.95	$195	$129.95	$99	$125	$139.95

[1] Because a Studio/1 document can be disk buffered, document size is limited only by disk space.

[2] Additional pattern sets may be loaded separately.

[3] DeskDraw can be used for this purpose, however.

Studio/1	SuperPaint 2.0
9	9
72 point	127 point
yes	yes
yes	no
screen size	screen size
1	limited by RAM
300 dpi	300 dpi
7 sec.	9 sec.
8 sec.	4 sec.
no	yes
4	4
yes	yes
yes	yes
yes	no
yes	yes
yes	(in object layer only)
yes	yes
44	128
yes	yes (selection only)
yes	yes
yes	yes
yes	no
yes	yes
yes	yes
yes	yes
yes	yes
yes (in text layer)	yes (in object layer)
yes	no
yes	yes
yes/yes	no/no
Control or Tab	Spoce
no	no
1/8, 1/4, 1/2, 2, 4, 8x	1/4, 2, 4, 8x
yes	yes
yes	yes
yes	yes[4]
yes	yes
yes	yes
1-E	1-H
$149.95	$199

[4] If the object layer is used to store the first image.

This table contains an overview of the features contained in the black-and-white paint programs covered in this article. Although Canvas offers full-color capabilities along with its object-oriented tools, I included it in the table because many users find it valuable in a black-and-white environment.

Paint limit you to 8-by-10-inch documents, and FullPaint is showing its age; even on a Mac II, for instance, you can't make its window larger than a Mac SE's screen size.

But MacPaint and FullPaint offer movable zoom inset windows; FullPaint and NuPaint have those nifty distortion and perspective commands; NuPaint and MacPaint offer the magic eraser for pseudo-layering. All three are simple to use. And at $99, FullPaint is less expensive than any other paint program.

Finally, there's the clumsy-looking but feature-laden desk accessory, DeskPaint. Don't use it as your primary program. It is intended for quick touch-ups and handy sketches—tasks it performs gracefully, quickly, and conveniently.

Art Nouveau

In the realm of black-and-white paint programs there's clearly still room for improvement. No program yet offers true layering, for instance. You can't paint trees on top of a mountain backdrop, or a pup tent in front of the trees, without losing what's behind. (The magic eraser tool provides a small step in that direction; the $299.95, primarily object-oriented Canvas is on the right track.) And no program has achieved the proper balance between the quantity of features and the immediacy and intuitiveness that made the original MacPaint so appealing.

But if anything is certain, it's that we haven't seen the end of the proud MacPaint lineage. There will be a fourth generation, and a fifth. A little sibling rivalry is perfectly healthy; Granddaddy MacPaint would be proud.

See *Where to Buy* for contact information.

David Pogue *bought his first Macintosh half-price as a Yale student. Now living in New York, he's a writer, consultant, and conductor.*



Studio/1 Is No Turkey
The text being entered in Studio/1 is in a separate text layer, where it remains fully editable at any time. Text entered on this layer prints at full resolution on a laser printer. The turkey in this illustration, by the way, makes gobbling noises and twitches its head, courtesy of Studio/1's animation features.



THE GAME HALL OF FAME

In its fourth year, the Hall confronts its darkest hour



BY STEVEN LEVY AND ADRIAN MELLO

There's no point in trying to hide it—this was a lean year for Macintosh games. Game makers are jumping off the Mac platform faster than guests from a burning high-rise hotel. We're sad to say that the Game Hall of Fame will induct fewer games into its shining corridors, in this, its fourth year, than in any previous year. The problem isn't a lack of breadth so much as a lack of depth. In the last few years the crop of good games was so strong that even though some games failed to win, they were still inducted into the Hall as runners-up and honorable mentions. This year only a couple of categories exhibited this kind of depth. And it's true that a couple of game categories that were strong in previous years, arcade and action games, are notably absent because not a single nominee was advanced by any judges.

How bad was this year? It was bad. In fact, it was such a bad year that contributing editor Steven Levy, the founder of the Hall and its regular chronicler, abruptly announced that he was going to sit this year out. So deep was his despair that he decided to protest the year's meager offerings—shaking the very foundation and tradition of the Hall. Who can blame him when many vendors seem to have decided to do the same

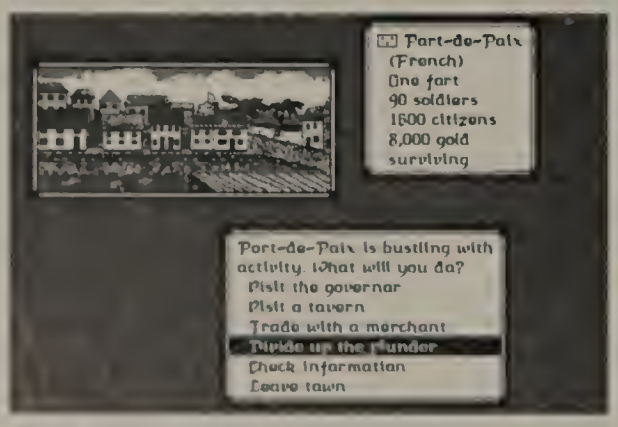
DANIEL FUNKHOUSER

thing? It was only at the last minute that he came out of his sulk. At first it was only to write up a couple of favorites. But being a person of weak moral character, he softened as he kept adding new favorites to his list. By the time he was done he had written up the winners for the Simulation, Adventure, Sports, Brain-Teasing, and Role-Playing categories. After tricking him out of his self-imposed exile, I filled out the collection by writing up the four remaining categories. In the end, we rediscovered our faith in the Mac as a game machine. And we can personally testify that you won't be disappointed with any of the titans we admitted into the Hall this year. Several bright stars shine through the dim mist, offering sanctuary to otherwise neglected Macintosh game players. This year's inductees deserve special recognition for providing moments of escape, and it is in honor of the creators of these games that the Game Hall of Fame carries on as a vigilant beacon, continuing to guide those who keep the faith.



SimCity

Godzilla crawls out of the bay and will maunder through Tokyo leaving a wake of destruction. The game largely unfolds in two map windows: the edit window (upper left) and the comprehensive window (lower right).



Pirates

The complexion of Pirates changes depending on the action. At this point in the game, the player is offered several choices for action after entering a French port.

SIMULATION

SimCity

Good simulations give you power over things that in normal life no one would let you get your hands on. SimCity puts you in control of an urban area. You are city planner, zoning board, budget director, and mayor. But your control is not total—like a real city, SimCity is an organism with a life of its own. Just as in real life, you have to cope with the consequences of your actions: industrial zones generate pollution, crowded downtown areas create horrid traffic jams. If your city gets big enough, the population demands a stadium to entertain it. Find the money! Bulldoze the area! Build the roads!

There are two ways to play SimCity: the first is to use prebuilt cities like Toyko or Rio, and unleash disasters on them, testing your ability to rebuild. Godzilla attacks Detroit; an earthquake in Hamburg. This method is for squids. Hip folks build from scratch, balancing opinion polls, and the charts that document their progress, with the satisfaction of seeing a living concrete latticework spring up from earth—your kind of town.

As you play you learn a lot about how cities work, how mass transit and parks and airports and police stations all affect the urban calculus. But it doesn't feel like learning—it feels like fun. That happens in great simulations, and SimCity qualifies.

ADVENTURE

Pirates

Steve Jobs once said, "It's better to be a pirate than join the Navy." Now we can see why. Pirates is a tour de force of gaming, somewhat in the mold of the classic exploration game Seven Cities of Gold. Only this time you take the role of a pirate, choosing your identity from a selection of noted brigands who terrorized the Caribbean in the sixteenth and seventeenth centuries. With a Gilbert and Sullivan swagger, you build your career, recruiting pirate crews, plundering merchant ships, aiding your home country in military missions, and often pursuing some romantic Errol Flynn mission that unfolds over a period of many hours.

The gameplay feels just right—this is no text adventure, but a hybrid, moving the plot along with dialog boxes but peppered throughout with arcade action. (The frequent swordplay does get tedious, however, and courts carpal tunnel repercussions.) Best of all, as you play you find yourself compelled to learn more about the milieu of the pirate-plagued seas in the early days of the New World. During the rare hours you spend away from your computer screen you will bore your friends by prattling on about the difference between a bark and a pinnace. You will give up on your friends, since the diversions they offer do not include accumulating plunder, sinking merchant vessels, or snaring a comely pirate wife. (A much more docile wench than my real wife, who is urging me to turn off the computer and go to sleep, already.) A truly excellent adventure.

ROLE PLAYING

Hidden Agenda

Nestled on the western coast of Central America, between Guatemala and Nicaragua, is the small coffee-growing country of Chimerica. A junta has overthrown the repressive dictator, and the new leader must balance the seemingly irreconcilable factions contending for power. These include the land-reforming campesinos, the authoritarian right-wingers, the smugly powerful military, the aristocratic landowning elite, the self-interested ambassadors, the global superpowers, and the radical reformers . . . the typical stuff of newspaper stories. Only this ain't the newspaper—the challenge of Hidden Agenda is for *you* to run the country and sort out this mess.

It sounds like some dry simulation devised at the Georgetown School of Foreign Service, but Hidden Agenda is not merely a social studies lesson. By drawing you into intensely personal interactions, the game makes ruling a Central American

country an emotional experience. The familiar litany of problems endemic to places like El Salvador—stuff like land reform, death squads, overseas influences—cease to become abstractions as you come in contact with people who embody the human realities of these issues. A HyperCard-like interface briefs you on the folks you deal with, and photos of these characters make them even more vivid. You develop attachments to some, and grow to hate others—but the nature of your complex task leads you to ultimately placate your worst enemies and betray people you respect. You might even indirectly be responsible for their death by terrorists.

Simply surviving, or letting your beleaguered country survive for a few years without much bloodshed, is a victory here. In fact, the game might well be called Mission Impossible. But if there is a Hidden Agenda, it is this: playing the game is a fascinating, visceral way to grasp the complexities of a vital issue. We hope this program finds its way to Ollie North's Christmas stocking.

SPORT

MicroLeague Baseball II

With the shipment of MicroLeague Baseball, a tremendous gap in the Mac gaming market has been filled: at last we have a baseball simulation that uses real players and the statistics they accumulate. Finally we can use our Macs for a higher purpose than spreadsheets or presentations: generating the events that occur in Wrigley Field, or Fenway Park, or Yankee Stadium. What better way to while away a month of evenings than to replay the previous year's entire baseball season, only this time, *you* control the lineup and managerial moves of, say, the Texas Rangers. Isn't the price of a Mac Plus small change compared to the benefits of proving yourself smarter than Bobby Valentine?

MicroLeague lets you do this and more. In contrast to the excellent HardBall, 1987's baseball Game Hall of Famer, MicroLeague concentrates less on reflexes and gameplay, and more on strategy as it pertains to the players, whose names and performances are duly licensed from the Major League Baseball Players Association. The game includes a collection of all-star teams and famous squads in history (including my favorite, a grouping called Philadelphia Phillies All-Time Greats, an oxymoron to be sure, but one that touches the heart of this homeboy), and you can order separately the entire major leagues as played a year ago. A General Manager function allows you to create teams of your own. If you are simply interested in seeing how these squads do against others, you can choose to play the game with lightning quickness—it runs by in a blur—and study the box scores at your leisure. Oh yes, one of the considerable virtues of MicroLeague Baseball is that it documents each game with a detailed box score and even knows when to bestow a save on the relief pitcher.

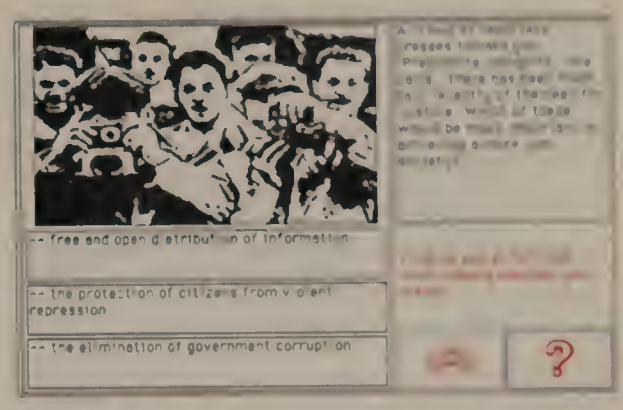
But most people will play the game in real time, savoring each pitcher-batter confrontation and making key managerial decisions (pinch-hitting, infield positioning, and so on). Yes, there are flaws, chief among them an annoying antipiracy measure that keeps you referring back to the manual for passwords. But this game is obviously a labor of love, filled with endearing details. For instance, before each game, prior to a line of the Star Spangled Banner, you hear a digitized snatch of the 1956 rhythm-and-blues classic "Let the Good Times Roll." The good times roll indeed, with Doc Blanchard, Pete Runnels, Bobby Wine, Vida Blue, Carlton Fisk, Cesar Cedeno. The names, all part of a true American poetry, come alive in this digitized field of dreams.

BRAIN TEASER

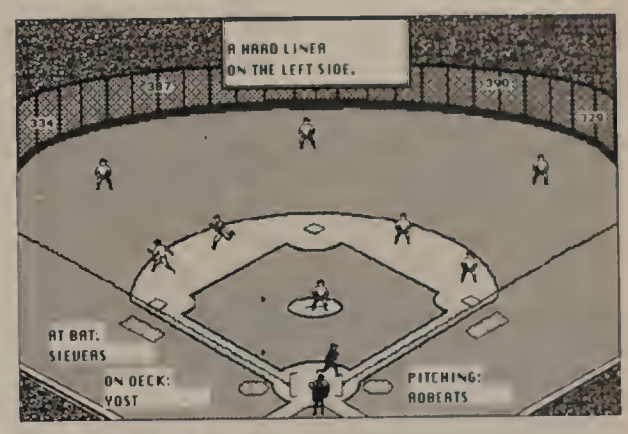
The Puzzle Gallery: At the Carnival

Cliff Johnson's epic of puzzle-solving, The Fool's Errand, was such a hit (as well as a Hall of Famer in 1987) that it was inevitable that he'd follow up with another. But with The Puzzle Gallery, he has followed up with an entire system, geared to churn out version after version of new scenarios involving the wacky sorts of word games, jigsaw puzzles, mazes, jumbles, and decoding exercises that made his first effort so bedeviling.

When you buy The Puzzle Gallery, you get the basic system and the first scenario, something called At the Carni-



Hidden Agenda
You set your agenda in the opening scene of the game while reporters press you with questions. Your performance during the game will be judged by the answers you provide.



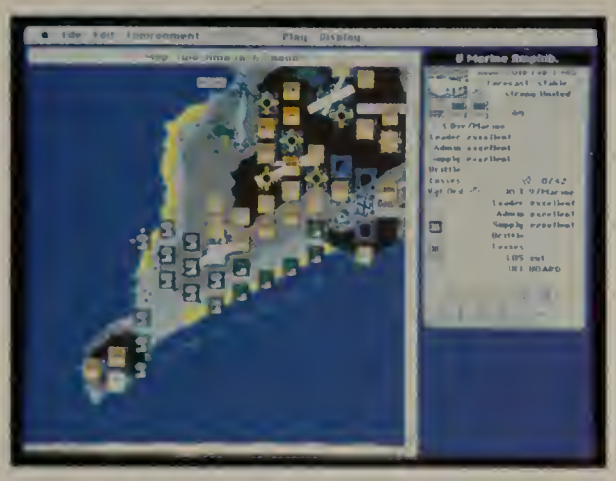
MicroLeague Baseball
The scene at Shibe Park as the Philadelphia Phillies All-Stars take on the 1955 Washington Senators. Roy Sievers has just hit a liner that Mike Schmidt is moving to snare. Note that you can see not only the ball but also its shadow—indicative of the game's attention to detail.



The Puzzle Gallery: At the Carnival
This word puzzle, based on a ride that assures destruction to the GI tract, appears after completing a jigsaw puzzle. There are a couple of dozen of these screens to be completed, involving different challenges, before the overall mystery is solved.

val The Puzzle Gallery shows its superiority in many ways. Those with Mac IIs will be delighted that it uses 256 colors with no complaint. But more significant is that the 180 puzzles, while addicting, are now so difficult that solving the whole enchilada is impossible without a hint book (at extra expense). Yes, that's right, 180 puzzles. Another major improvement is that the plot line for this one has more teeth: you are sampling the attractions of Hazard Park, an amusement mecca that is less than meticulous in dealing with customer safety.

Sprinkled throughout the puzzles are ominous hints of a dark side to Hazard Park; some of the clues are humorous, and at times they border on sophomoric. But they add a certain pungency to an exercise that, even at its worst, gets the literate gamer hopelessly hooked.



Halls of Montezuma
One of the eight scenarios provided with the game is the battle for Iwo Jima. You can reenact the battle from the perspective of either the Japanese or the American viewpoint as you provide orders to your side's combat units.



Shanghai
The pyramid of three-dimensional tiles is called the dragon. The goal of the game is to remove all the tiles by matching pairs of tiles that are unblocked from the right or the left.

STRATEGY

Halls of Montezuma

Most strategy games are an interpretation of war. It's an unwritten rule that the more closely a strategy game attempts to simulate warfare, the less fun it's likely to be. Most aficionados will agree that software war games have failed to provide either the visual appeal or more realistic simulation of traditional board games. If you've been a closet war-gamer you can come out now because there's finally a war game worth fighting for: Halls of Montezuma. Halls of Montezuma is the first good war game I've seen running on any computer. This game is a milestone because it strikes a balance between simulation and playability.

Halls of Montezuma comes with eight preconfigured scenarios, tracing the history of the U.S. Marine Corps from Mexico City to Hue. The game consists of a number of turns, which you can play against either a computer or a human opponent. Once you give orders for movement and other factors such as air support to each group of units on the map under your control, the battle is enacted. The computer handles the mechanics of movement and combat—grinding out the many factors that determine the attrition and final positions of the opposing forces. Like any good general, you must assess the many factors that shape the outcome of battle. Can you overcome the terrain? What is the enemy's disposition? Can you maintain your line of supply? How many squadrons of air support should you commit, and to which battalions?

Halls of Montezuma also lets you devise your own scenarios with a game generator that lets you create different battlefields and specify the types and number of units involved, as well as other scenario specifics. The game is at its best in color because the multicolored terrain and battle counters successfully duplicate the visual texture of a printed board game. For those of you who don't have a Mac II or a color monitor, the game also comes with alternatively rendered scenarios for monochrome Macs. Whichever version you choose, you'll find that Halls of Montezuma successfully combines the pleasure and realism of a board game with the convenience of a computer game.

Strategy games was one of the few categories exhibiting any depth this year, with two well-deserving runners-up. The Ancient Art of War at Sea is a game of naval tactics using a system similar to that of The Ancient Art of War, already in the Hall of Fame (1986). Nemesis Go Master is another runner-up because it is an extremely well executed version of the ancient board game go. This computer version is a good way to learn how to play go, but it is also capable of challenging players with ratings up to 12 or 15 *kyu*.

COLOR

Shanghai

Didn't you hate it when game vendors put the Mac version of a game in the same package that they used for the IBM PC, Amiga, and Apple II? Mac II owners have been tormented with color screenshots on package backs while being forced to live in the same black-and-white world endured by Plus and SE users. Fortunately, in the last year a small treasure chest of good color games have been released for the Mac II family (and with a color monitor, the SE/30 as well). Among these are some of this year's Hall of Famers, including Halls of Montezuma, The Puzzle Gallery, and SimCity. Even InfoCom has gotten into the act by including attractive color screens in its recent text adventure games such as Shōgun and Zork Zero.

But one gem sparkles brighter than the rest: Shanghai. If you've ever bought a book or a record album by its cover, you may find yourself in the same situation with Shanghai. When most people see this game on screen for the first time it looks so good that they want to play it before they even know what the game is about. The pyramid of finely detailed color tiles presents a tapestry that's hard to resist.

But Shanghai's beauty is more than skin deep—it is also an addictive and extremely playable game. Apart from several refinements, the game itself is the same challenging strategy game that earned it a previous spot in the Game

Hall of Fame. Shanghai is based on mah-jongg—the 3000-year-old Chinese board game. There are 144 tiles in 7 suits. The tiles have a three-dimensional appearance, and when you remove a pair of tiles you hear a resonant click, making the pleasant sensation of manipulating these beautiful tiles all the more palpable. Successful removal of the tiles gradually uncovers one of three beautiful color backgrounds, rewarding the adept player with an image of a dragon, a tiger, or a pagoda. You can play Shanghai immediately because the rules are so simple. However, after you play a couple of games you realize that Shanghai can be played at a more sophisticated level as you plot a well-planned order for removing tiles.

The Colony gets an honorable mention. Last year it made the Hall of Fame. This year's addition of color makes the game more appealing and more playable; it's easier to identify objects and enemies.

NETWORK

NetTrek

There's a conspiracy afoot. Those same humorless marketeers who have transformed the computer "for the rest of us" into a capitalist tool are now busy suppressing the truth about network games. Why, if acquiescent node slaves ever discovered the corrupting influence of network games, corporate connectivity schemes might come apart like the Soviet republics under *glasnost*. But don't listen to them. Play network games and decide for yourself. There's just something about decimating unseen opponents in a network melee that can't be beat—not computer opponents, but human adversaries that you can stump, scorn, frustrate, trick, swear at, threaten, and take revenge upon.

This year the Hall is inducting NetTrek, a space warfare game loosely based on the hit TV series "Star Trek." Up to six players take command of a starship from one of three galactic empires: the Terrans, Klings, or Roms. The goal of the game is to deploy a base in all seven star clusters before your opponents do. At first, controlling the starship is a real challenge as you attempt to master the techniques of inertial movement (with both warp and impulse drive) while confronting adversaries with phasers and photon torpedoes. As you gain mastery, you learn how to balance movement, weapons, and shields against the use of scanners, cloaking devices, and energy consumption. Since it's easy to get disintegrated by more adept players, it's wise to practice against the computer for several hours in a reasonably playable solitaire mode. NetTrek is in color, but the graphics are primitive, using only simple 2-D views of stars, ships, and instruments. However, once you overcome the difficulties of handling a starship, the game successfully devolves into an addictive exercise in network atavism.

INTERACTIVE STORYBOOK

The Manhole

The Manhole lifted the cover on a new genre of computer entertainment. Last year we added rooms in the Hall of Fame for Mac II games and network games. This year we've added a room for interactive storybooks. An interactive storybook is like a graphics adventure game, but with no objective other than exploration. Strictly speaking, interactive storybooks aren't games. However, they are so entertaining that we didn't want to exclude them.

The Manhole begins when you open, appropriately enough, a manhole cover and climb the beanstalk that begins growing out of it. From here you step into a strange twilight world in which you discover a variety of enigmatic vignettes. Exploring the Manhole can put you into an almost meditative frame of mind. The simply drawn black-and-white scenes let you bring your own imagination to each episode in a way that makes the exploration quietly personal. The Manhole's storybook-like nature makes it especially suitable for children, but as when reading a good children's book, you may find yourself just as enthralled as your child.

The Manhole is actually a construction of HyperCard stacks, and it is available as a CD ROM or as several floppy disks (a hard disk is required to accommodate them). When the Manhole first appeared, most of us felt that it was the first example of an interactive storybook, and that we would see many more. Already, the Manhole's creators have created a second offering called Cosmic Osmo. However, this cartoonish story received mixed reviews from the judges. While Osmo's whimsical humor was a delight to some, others did not feel that it had the magic of the Manhole. At any rate, if you want to see a new alternative in computer entertainment you should investigate the Manhole, an interactive storybook that already has the makings of a classic. ◘



NetTrek
Two starships engage in a dance of destruction, exchanging phaser fire and photon torpedoes. The instrument panel to the right is used to control all aspects of a ship's operation.



The Manhole
The first scene of this interactive storybook presents you with—what else?—a manhole cover. Remove the cover and a giant beanstalk grows out, which you climb to explore a number of fantastic scenes.

See *Where to Buy* for contact information.

Steven Levy *is a* Macworld *columnist and the author of* The Unicorn's Secret Murder in the Age of Aquarius *(Prentice-Hall Press 1988)*
Adrion Mello *is senior editor at* Macworld, *which made it possible for him to practice character assassination on Steven Levy*



MICK WIGGINS

Network Speed Trials

Macworld Labs

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tests two ways

•

to speed up

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your AppleTalk

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network

BY DAVE KOSIUR

AND KEE NETHERY

Is your network slower than molasses running uphill in winter? Are the network users ready to resort to hand-delivering floppies—again? It's time to speed things up on the network.

We took a serious look at two higher-speed alternatives to running AppleTalk over your LocalTalk cabling: Dayna Communications' DaynaTalk, and FlashTalk from TOPS. While both offer some performance advantages over LocalTalk, to achieve optimal performance

each product must restrict a network's topology. These restrictions, unfortunately, may keep you from using DaynaTalk or FlashTalk, especially on preexisting networks.

First Things First

Not all network speed problems are due to the network's bandwidth. For example, plugging a Mac into a FlashTalk or DaynaTalk network won't make the Mac run any faster than a Mac on a LocalTalk network. The Mac's own processor speed, disk access time, operating system, and application efficiency—among other things—will impact any results you get with higher-speed networks.

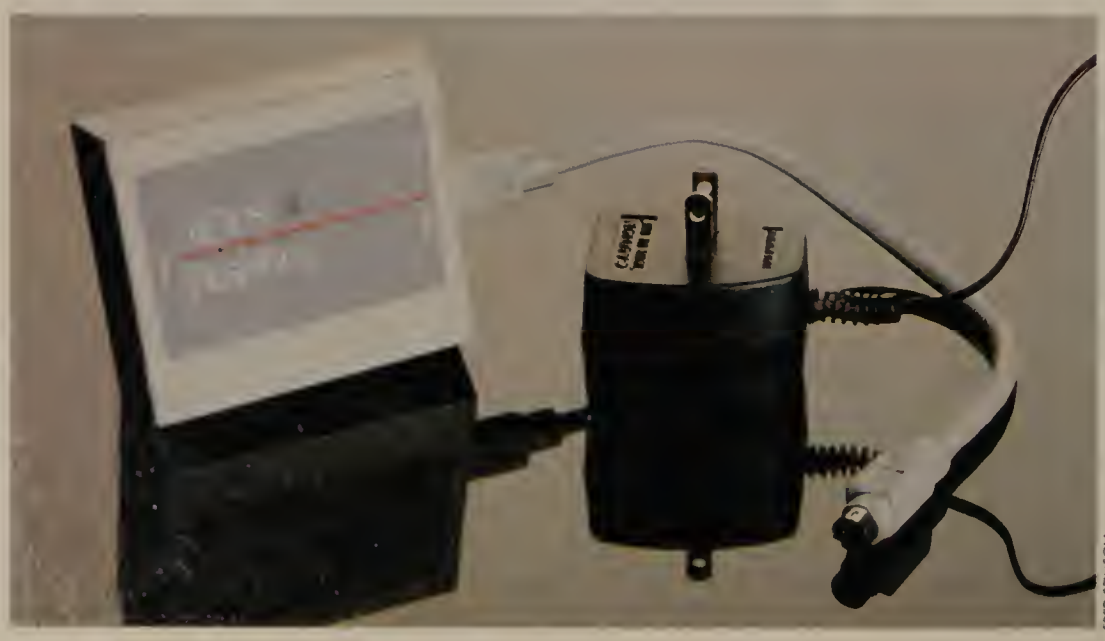
One advantage of both FlashTalk and DaynaTalk is that they use the same cabling as a LocalTalk or PhoneNet network

Does someone on the net always launch applications from the server? Is someone always printing huge documents on the LaserWriter? Perhaps there's a multiuser database sitting on a slow server? Any of these problems might be solved by reconfiguring the network—adding routers or faster hard disks, for instance—or by analyzing the networking capabilities of your applications. But for the moment, let's suppose that you really need the increased bandwidth of a different network. LocalTalk and PhoneNet can operate at speeds of 230.4 kilobits per second (kbps). FlashTalk, meanwhile, can run at 768 kbps, DaynaTalk at 850 kbps.

Again, it's important to remember that although these alternatives are three to four times faster than LocalTalk, Mac network applications and file transfers won't necessarily run three to four times faster. Raw data rates don't tell the whole story.

Still, there is an immediate benefit to higher-speed networks. Since data will travel from sender to recipient faster, data from another node can make it onto the network sooner. That's really what bandwidth is all about. Your machine may not be able to create data packets any more quickly, but those packets may get onto the net faster, enabling more network conversations in a given unit of time.

TOPS' FlashBox allows Macs and PCs to communicate at speeds up to 768 kilobits per second over a LocalTalk or PhoneNet network. Because FlashBox requires an external power supply, you need to make sure that there are outlets near all the network devices.



FRED STIMSON

Working with FlashTalk and DaynaTalk

First we'll take a look at the features of FlashTalk and DaynaTalk. Then we'll present the results of our network tests.

Both FlashTalk and DaynaTalk claim to offer greater bandwidth than LocalTalk without a significant increase in cost. They do this by substituting their own protocols for AppleTalk protocols.

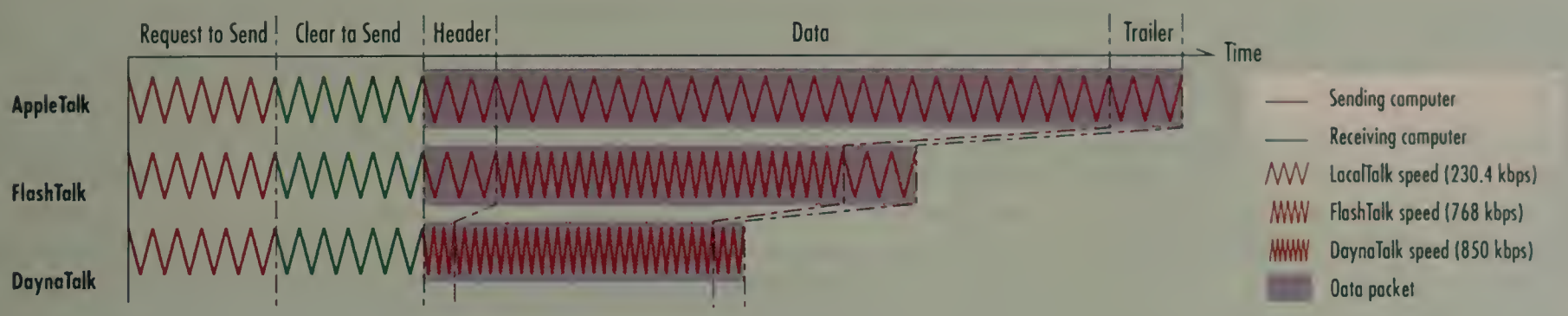
One advantage of both FlashTalk and DaynaTalk is that they are designed to use the same cabling as a LocalTalk or PhoneNet network. As a result, you don't have to totally rewire any existing network. You simply have to install the software (FlashTalk or DaynaTalk drivers), and put a hardware device between the LocalTalk or PhoneNet connector and the Macintosh.

FlashTalk

TOPS first introduced FlashTalk on its FlashCard, an AppleTalk adapter card for the IBM PC AT and compatibles. FlashCard allowed Macs and PCs to talk to each other at the regular 230.4 kbps LocalTalk speed. Two PCs with FlashCards, however, could communicate at a rate of 768 kbps using FlashTalk network protocols. Now, with the release of TOPS' FlashBox, Macs can get into the 768-kbps act.

Because FlashTalk needs a combination of hardware and software to work, not all network devices have equal standing. If you've got a Mac equipped with FlashBox, or a PC with FlashCard, the Hercules Network Graphics Card, or TandyLink, you've got a FlashTalk-capable device that can interpret FlashTalk data. Some products, such as the TOPS Repeater, and Farallon's Repeater and StarController, cannot initiate FlashTalk communications, but can pass FlashTalk data at 768 kbps. TOPS refers to such products as FlashTalk-compatible. Then there are other products

SENDING PACKETS



For two Macs to talk to each other on a network, the sending Mac must know that the receiving Mac is ready to receive. Before the sender transmits any data packets, it sends a Request to Send signal to the receiver, and the receiver must respond with a Clear to Send signal. Data packets consist of header information, the actual data, and then trailer information. The header and trailer identify the beginning and end of data packets. Each of the network protocol suites tested (AppleTalk, FlashTalk, and DaynaTalk) transmit information differently on a network. In FlashTalk, the Request to Send and Clear to Send signals are sent at LocalTalk speed, as are header and trailer information. Only the data itself travels at the higher FlashTalk speed. DaynaTalk uses LocalTalk-speed Request to Send and Clear to Send signals to determine that both machines can operate at DaynaTalk speed. After that, all subsequent packets—header, trailer, and actual data—are transmitted at the higher DaynaTalk speed. AppleTalk packets moving over LocalTalk are shown here for the sake of comparison.

that cannot do anything with FlashTalk at 768 kbps. This list includes the Apple LaserWriter, Hayes InterBridge, and Kinetics FastPath.

At the moment, not all Macintoshes can use FlashTalk. TOPS provides drivers for the Mac Plus, the SE, the II, SEs using the GCC HyperCharger, and SEs with Radius accelerators. Levco accelerators are not supported; neither are any accelerators for the Mac II. TOPS has announced a fix that allows you to use the FlashBox with 68030-based Macs such as the IIx, IIcx, and SE/30; this fix should be available about the time you read this article. The FlashBox also requires an external power supply, so you should plan on having sufficient outlets near each Mac when you're installing FlashBoxes. And despite warnings in the user's manual, we found it too easy to plug the wrong connecting cable into the wrong socket of the FlashBox. We ruined at least one FlashBox unit this way.

FlashTalk was initially designed to coexist with AppleTalk. In other words, devices on the network could use the same wire to transmit either 230.4-kbps (LocalTalk) packets or 768-kbps (FlashTalk) packets. However, that capability also meant that the two packet types could collide on the wire, losing data, slowing network response, and sometimes requiring to be re-sent.

The problem is getting both types of nodes to recognize that legitimate traffic is on the network, even if data packets are being transmitted at different speeds. A FlashTalk node must recognize not only FlashTalk traffic, but also AppleTalk traffic; similarly, an AppleTalk node must be able to know when both AppleTalk and FlashTalk traffic exists on the network. Otherwise, both types of nodes will try to transmit at the same time. Packet collisions result.

To eliminate the multispeed collision problem, TOPS currently recommends creating FlashTalk-only networks. If you cannot put FlashBoxes and FlashCards on all of the machines in a net, you need to isolate the FlashTalk-capable network from the non-FlashTalk network (say, one with a LaserWriter, or some accelerated Macs). One solution is to use a TOPS repeater to isolate the non-FlashTalk net. The expected ease of mixing LocalTalk machines and FlashTalk machines on one single network disappears.

Dayna's SpeedGuard Collision Filters, which we'll discuss in more detail shortly, provide a second solution for mixing FlashTalk and LocalTalk devices on the same network. Collision Filters also work with FlashTalk. So, if you've installed a FlashTalk network and need to isolate a LaserWriter, for instance, you can purchase the Dayna Collision Filter to isolate it.

RECOMMENDED CABLE LENGTHS

	AppleTalk (230 kbps)	FlashTalk[1] (768 kbps)	DaynaTalk[2] (850 kbps)
LocalTalk cable	1000 feet	400 feet	1000 feet
PhoneNet cable	3000 feet	600 feet	1000 feet

[1] *Recommended by TOPS* [2] *Recommended by Dayna*

TESTING, 1, 2, 3...

The primary objective of the network tests that we ran was to determine the efficiency of data transfers across a network. Thus we were mostly concerned with the speed of file transfers and the behavior of multiple-file transfers in these higher-bandwidth networking schemes.

To guarantee that we were, in fact, testing a network's bandwidth, we set up four individual AppleShare client-server pairs on one network (see "Network Speed"). By assigning each server only one client, rather than multiple clients, we could ensure that file transfers were not limited by the server's response to multiple requests. This way, we were able to regularly increase the network traffic (by successively adding a server-client pair to the net) without impacting a server's performance.

Each client and server was a Mac II with 5MB of RAM. No competing applications were run as foreground tasks on the servers. As much as possible, we used hard disks with similar access times for each computer; we used SCSI Evaluator to test disk data transfers. We formatted and initialized disks at the start of the tests to guard against any fragmentation effects.

MacWorld Labs ran the tests as follows. First, we used a single server-client pair. Then, the same file transfers were run with two pairs, three pairs, and finally four pairs of servers and clients. These tests are referred to in our results as one-station, two-station, three-station, and four-station tests. We ran the same test suite for both LocalTalk and PhoneNet cabling.

We tested two types of data transfer. The small-packet transfers were generated by reading the Mac's system clock, opening a file on the server, sending the clock value (in ticks) to the server's file, and then closing the file. This was repeated 100 times and the results averaged. These small packets represent network activity such as typing a few characters to a file, opening the Chooser DA and selecting a network resource, or working with a network modem.

The big-packet transfers were generated by copying a 1MB file from client to server; these file transfers forced the network to send the data in the largest packets AppleTalk allows, and they led to heavy network usage. Each file transfer was repeated ten times and the results averaged. All of the file transfers were controlled by a HyperCard stack written by Kee Nethery; all raw data was also stored in the stacks (one for each client) for later analysis.

FlashTalk operates at higher frequencies than AppleTalk over LocalTalk. As a result, signal losses due to the cable require that you use shorter lengths of LocalTalk cable for FlashTalk than for LocalTalk (see "Recommended Cable Lengths").

DaynaTalk

Dayna's foray into the field, DaynaTalk, offers features similar to those of FlashTalk. However, DaynaTalk is designed to operate at an even higher speed, up to 850 kbps for Macs. The Mac II series, Mac SE, and SE/30 can take advantage of that speed; Mac Pluses are limited to a maximum speed of 740 kbps.

Like FlashTalk, DaynaTalk is a combination of hardware and software. And, like TOPS, Dayna offers a board for IBM PCs. PCs communicating with each other using DaynaTalk PC boards can transfer data at speeds up to 1.7 megabits per second. Unlike the FlashBox, DaynaTalk hardware doesn't require an external transformer or power supply. DaynaTalk hardware has the connecting cable for the Mac permanently attached to it. Thus, you avoid FlashTalk's problem of plugging the wrong cable into the wrong socket.

DaynaTalk can be user-configured to run at different speeds, either to accommodate the different machines on a network or to deal with poor-quality wiring. (Dayna suggests running at only 600 kbps if substandard wiring is used.) DaynaTalk can run as a FlashTalk emulator, that is, at FlashTalk's 768-kbps speed. This enables DaynaTalk and FlashTalk devices to coexist on the same network.

If you're running a DaynaTalk-only network, you shouldn't have any problem avoiding collisions. For networks that combine DaynaTalk and AppleTalk,

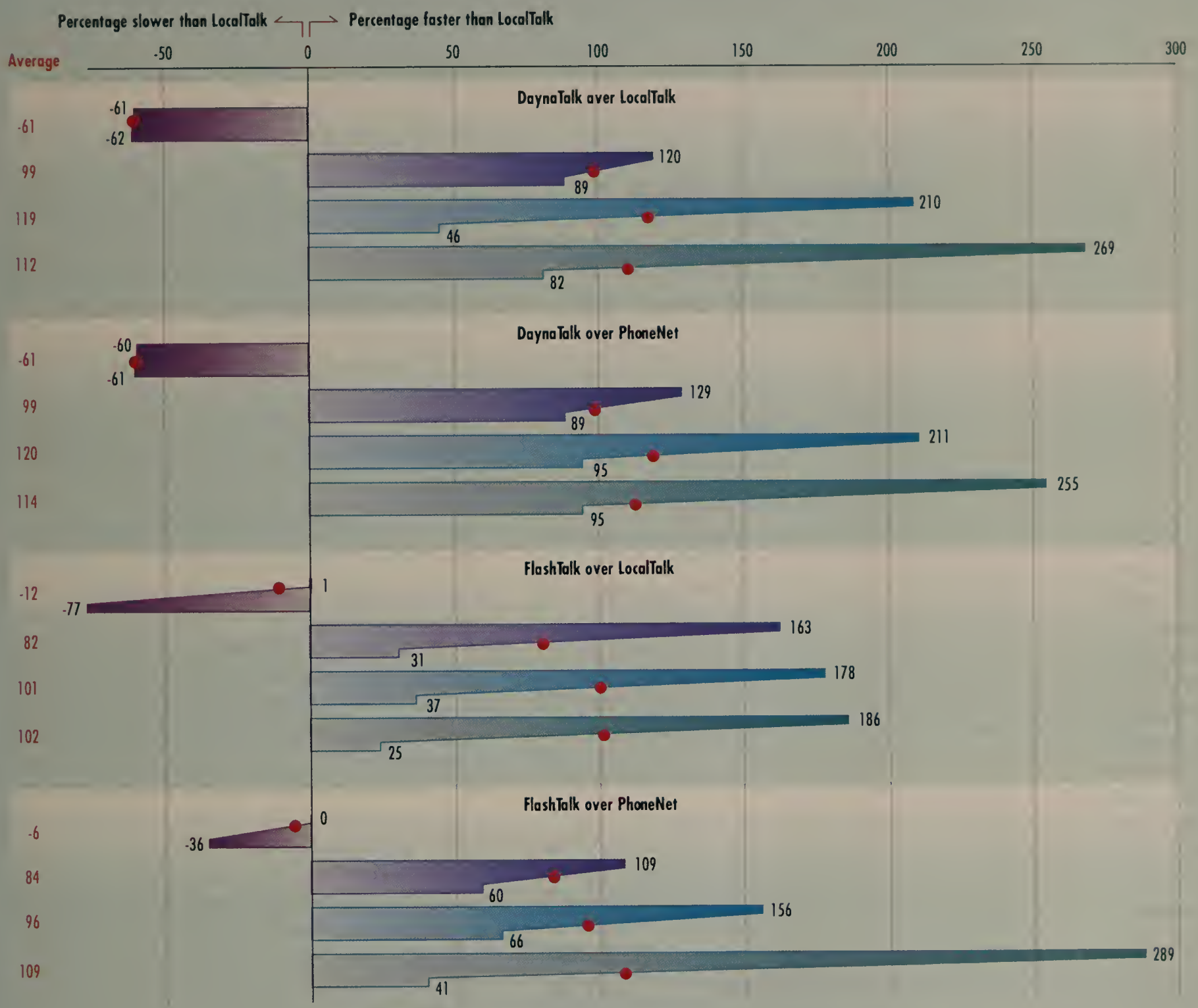
File transfers when only two nodes are talking may take longer on a FlashTalk or DaynaTalk network than on a LocalTalk network

Dayna provides two methods to deal with multispeed collisions—SpeedGuard Timing and SpeedGuard Collision Filters.

SpeedGuard Timing is a software trick that allows you to mix network speeds under very limited circumstances. How limited? As an example, a DaynaTalk network with a LaserWriter Plus running at LocalTalk speed will work if you install only SpeedGuard

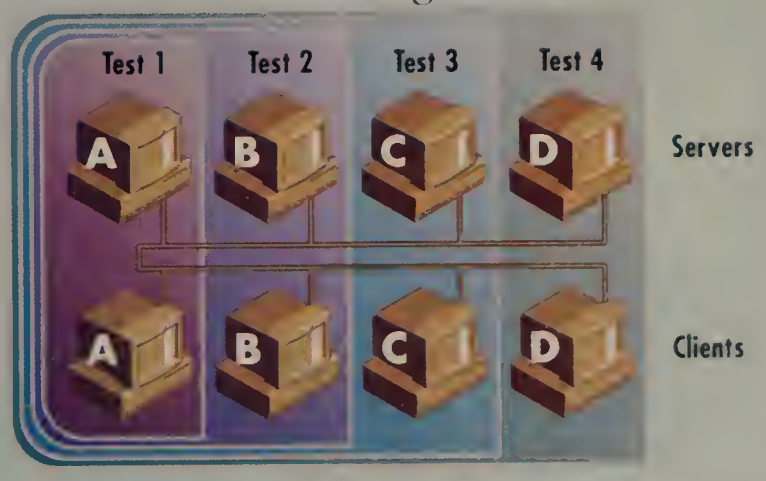
Network Speed

Measured as a percentage faster or slower than LocalTalk



We set up a single network of eight Mac IIs to test the performance of DaynaTalk and FlashTalk running over both LocalTalk and PhoneNet cable. Four of the Mac IIs were AppleShare servers, and four were AppleShare clients. Each server had only one client logged in at a time. The graph above illustrates the results of our file-transfer tests. Each result is graphed relative to the time it took for the same file transfer to occur over LocalTalk cable with AppleTalk protocols. The upper part of each bar shows the fastest time it took to transfer a file; the lower part shows the slowest time. The red marker in each bar represents the average file-transfer time we measured over 10 tests (specified to the left of each bar). The different bar colors represent another client-server pair being added to the network. For more background see "Testing 1, 2, 3..."

Network test configurations



Timing. A DaynaTalk network with a LaserWriter II running at LocalTalk speed won't work with only SpeedGuard timing because of multiple-speed packet collisions. SpeedGuard Timing cannot be used if you run DaynaTalk at FlashTalk speeds, since FlashTalk knows nothing about SpeedGuard Timing.

For mixed-speed networks, Dayna offers the SpeedGuard Collision Filter, a $60 box that you install on all 230.4-kbps nodes (LaserWriters, routers, network modems, and so on). This filter eliminates multispeed collisions by preventing the slower devices from interrupting high-speed transmissions. When the collision filter detects high-speed data, it lets the slower speed device hear what sounds like 230.4-kbps data. Since the slow-speed device hears that the network is busy, it does not generate a packet until after the high-speed data packet is through.

Once you start adding network traffic, both FlashTalk and DaynaTalk show similar speedups in file-transfer times

As noted in the discussion of FlashTalk, not all network devices are capable of operating at speeds greater than LocalTalk's 230.4 kbps. In DaynaTalk's case, products like the PhoneNet Repeater or TOPS Repeater are unable to pass DaynaTalk packets. DaynaTalk nodes transfer data through repeaters at normal LocalTalk speeds. Older Kinetics FastPaths (before version 2) also had difficulties running with DaynaTalk on larger networks due to differences in LocalTalk electrical specifications. Farallon's PhoneNet StarController does support the higher transmission speeds of DaynaTalk.



FRED STIMSON

When equipped with DaynaTalk connectors, Macs on a LocalTalk or PhoneNet network can communicate over the network at speeds up to 850 kilobits per second. Dayna's SpeedGuard Collision Filter keeps slow network nodes—those that can only communicate at 230.4 kbps—from interfering with high-speed DaynaTalk.

Where's the Beef?

Because both FlashTalk and DaynaTalk claim benefits for LocalTalk users, we devised a set of tests to determine how much each product improves on LocalTalk (see "Testing, 1, 2, 3 . . ."). Our primary goal was to look at high-traffic situations and see if FlashTalk or DaynaTalk could provide any increase in file-transfer rate. We also wanted to see how FlashTalk and DaynaTalk allowed users to take advantage of higher bandwidths. The summary table shows what we found (see "FlashTalk versus DaynaTalk"). Except where noted, the following comments pertain to large file transfers. The size of our test file was 1MB.

File transfers when only two nodes are talking (a single client and a server) may take longer on a FlashTalk network or a DaynaTalk network than on a LocalTalk network. This may be due to the arbitration necessary to determine if both machines are capable of communicating with FlashTalk or DaynaTalk protocols. Or Apple may have tweaked AppleShare to provide the best performance possible at 230.4 kbps.

Once you start adding network traffic, both FlashTalk and DaynaTalk show similar speedups in file-transfer times. DaynaTalk and FlashTalk run about 50 percent faster than LocalTalk.

We also noted, in our multiple-server tests, that FlashTalk frequently locked clients out from communications. This is reflected in the large differences in the maximum transfer times when compared with the average transfer times. Only FlashTalk had ranges greater than the averages.

TOPS specifies that LocalTalk networks have a maximum length of 400 feet when using FlashTalk. Dayna says that DaynaTalk works fine on the typical LocalTalk maximum length of 1000 feet. We found that the minute we extended a network beyond the 400-foot limits recommended by TOPS, FlashTalk did not behave properly and slowed down considerably. DaynaTalk, on the other hand, worked fine on 1000 feet of LocalTalk cable.

We also tested FlashTalk and DaynaTalk transfer rates with small blocks of data to simulate using the Chooser or network modems. In such cases, there was very little difference between the two products.

During our tests, problems with component reliability reared their ugly heads. We had no problem with DaynaTalk units. However, we had to repeat some of our FlashTalk tests several times. On more than one occasion, TOPS' FlashTalk diagnostics program claimed that a FlashBox on our test network was defective.

FLASHTALK VERSUS DAYNATALK

File Transfer Times (in seconds)

	1 STATION			2 STATIONS			3 STATIONS			4 STATIONS		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
BIG PACKETS												
LocalTalk	17.51	17.27	17.67	73.34	52.18	86.12	117.26	18.15	218.80	150.14	14.95	336.90
PhoneNet	17.57	17.33	17.80	72.78	41.50	109.89	114.22	35.00	197.05	156.01	45.70	385.78
DoynoTolk on LocolTolk	28.23	28.12	28.33	36.86	33.40	38.75	53.49	38.95	80.18	70.68	40.67	82.40
DoynoTolk on PhoneNet	28.18	28.10	28.27	36.77	32.02	38.82	53.41	37.70	60.28	70.06	42.35	77.02
FloshTolk on LocalTolk	19.63	17.40	31.00	40.31	27.88	55.92	58.20	42.20	85.68	74.26	54.43	120.45
FloshTolk on PhoneNet	18.53	17.53	23.90	39.56	35.08	45.70	58.09	45.80	70.65	74.81	38.62	106.35
SMALL PACKETS												
LocolTolk	0.1243	0.1000	0.1500	0.1318	0.1167	0.4167	0.1467	0.1000	2.1167	0.1858	0.1167	6.9500
PhoneNet	0.1255	0.1000	0.1500	0.1417	0.1000	1.8167	0.1515	0.1000	2.0500	0.2250	0.1000	17.3167
DaynoTolk on LocolTolk	0.1372	0.1167	0.1333	0.1455	0.1167	0.1667	0.2165	0.1167	0.4333	0.2063	0.1167	0.4333
DoynaTolk on PhoneNet	0.1327	0.1167	0.1500	0.1543	0.1167	0.4167	0.2145	0.1167	0.4167	0.2055	0.1000	0.4333
FlashTolk on LocolTolk	0.1515	0.1167	0.1667	0.1587	0.1167	1.5000	0.1628	0.1167	6.9333	0.1702	0.1167	8.233
FloshTolk on PhoneNet	0.1610	0.1167	0.1667	0.1610	0.1167	1.4667	0.1743	0.1167	6.8000	0.1683	0.1167	6.9167

Our Recommendation

If your network activity consists mainly of small packets (brief E-mail messages, or typing in a word processor, for example) you won't benefit from switching from LocalTalk to DaynaTalk or FlashTalk.

On the other hand, network users who make large file transfers (graphics or multimedia files, for example, or page layouts), or network users who need to access applications or databases from a file server, can benefit from switching to an intermediate-speed alternative. Depending on your network configuration, you can expect an improvement of anywhere from 25 percent to 50 percent in file-transfer times on a FlashTalk or DaynaTalk network compared to a LocalTalk or PhoneNet net. The degree of improvement depends on the types of devices you have on your network. Not every network node can communicate at FlashTalk's top speed of 768 kbps and DaynaTalk's top speed of 850 kbps. So, for example, if your AppleShare server is a Mac Plus, the fastest it can talk to any other Mac—or any Mac can talk to it—on DaynaTalk is 740 kbps. You won't be able to spool documents to a LaserWriter any faster, simply because a LaserWriter has to communicate at 230.4 kbps. And under no circumstances, we should emphasize, will your LaserWriter print any faster.

As our tests show, the more users you have trying to use the network, the better results you will get. Both DaynaTalk and FlashTalk have obviously been designed to increase the ability of a network to respond to heavy use.

There's still a catch, though. Using DaynaTalk or FlashTalk may mean physically reconfiguring the network. Simple networks that don't approach the maximum limit of LocalTalk cable should be fine. But if you're using unshielded twisted-pair cable like PhoneNet's to create networks of greater than 1000 feet, you have two options. First, look for ways to shorten the network; second, install repeaters, which add to the upgrade cost. DaynaTalk has an advantage here, because it supports 1000-foot lengths of both shielded and unshielded twisted-pair cable.

If you do decide to switch to either DaynaTalk or FlashTalk, expect to pay about $190 per intermediate-speed node and about $60 for each network node that must run at LocalTalk speed.

FlashTalk's performance is in the range that TOPS claims—up to a 50 percent improvement over LocalTalk. DaynaTalk also offers a 50 percent improvement, but with fewer errors, at both DaynaTalk and FlashTalk speeds. In addition, DaynaTalk puts fewer restrictions on network configurations. Considering that FlashTalk and DaynaTalk cost the same, DaynaTalk is the better product. ■

Dave Kosiur *is the editor and publisher of* Connections, *a bimonthly newsletter on Mac connectivity. Both he and his network are running fast enough, thank you.*

Kee Nethery *is the principal of Kagi Engineering in Berkeley, California. He is waiting for someone to design the ultimate network device—a NetTurboToken-StarTalkPlus Connector.*

EXCLUSIVE: *The following is a transcript of a cassette tape mailed to Macworld by a group identifying itself as the New proMischievous League. The voice on the tape is purported to be that of none other than computer mogul John SCSI as he dictates his holiday shopping list to his trusted aide, Scrumbley. There was no return address and I couldn't verify the authenticity of this attribution, but I did check all the items on the list—twice—and I can assure you that whoever compiled this catalog of gift ideas knew how to put a twinkle in the eye of all the Mac-ophiles on his or her list. Casting journalistic caution into the wassail bowl, Macworld has decided to publish—as a public service—the full transcript of...*

Mr. X's Xmas List



What do you get from the man who has everything? Great gift ideas!



by Suzanne Stefanac

PHOTOGRAPHS BY PAUL FRANZ MOORE

The tape begins with muffled scuffling sounds followed by a Mac II start-up chord and a few bars from the theme of Matt Gumm. After the sound of silver clinking against china, the voice—authoritative and with a slight New England twang—begins.

Ahem. Now, where did I bury that damn file? Ah, here it is in my Do It Now folder.

Scrumbley, the holidays are moving in on us quicker than the boys at Big Blue. I don't want to sound like some bah-humbug, but with the reorg meetings and all I just don't have time to elbow my way through all those carolers and other persons of goodwill. So be a good fellow and see that these gifts are sent out in plenty of time for the holidays, will you?

And listen, I'm noting the retail prices for each of the items, but I'm hardly on a par with the Three Kings, so see if you can't scare up some better prices at the local discount outlets or at a mail-order house.

Don We Now Our Mac Apparel

Let's see, my wife complains that platinum is boring—unless it's the real thing, of course—and that the Mac doesn't fit in with her decor. Let's send her a How-Now-Faux-Cow **Mac Cozy** from Future Studio to cover her SE. You'll find the order number in my reference copy of the *Chicken Boy Catalog for a Perfect World.* Substitute the Not-Really-Dalmatian or the Hula du Jour Hawaiian print if you have to, but the fake cowhide should go well with the corrugated steel desk I've already ordered for her.

And make sure you throw in a copy of the catalog. She'll get a kick out of the fact that those Mac-fanatic Future Studio kids rescued a two-story-tall cement chicken from the wrecking ball (their motto: "Too tall to live, too weird to die") and then built a whole entrepreneurial enterprise around the former fast-food mascot. (Mac SE cover $30; keyboard cover $15; ImageWriter II cover $30; prices for custom fabrics or unusual Mac configurations run a bit more.)

I'm tickled that she's finally using her Mac. She even took it to the islands last month. Said she was just writing some letters, but I peeked and it turns out she's working on a cyberpunk novel. Reads pretty well, too. Let's toss in a **Macinware SE Extended Carrying Case** from I/O Design. Maybe she'll surprise me with the finished product after our next vacation. (Case for Mac SE with extended keyboard $129.95.)

And send Norma Jean, our receptionist—I mean, area assistant—a **Large Screen Anti-Glare Filter** from Kensington Microware for her screen. The way she frowns and squints at her Mac could give our guests the wrong message. The Mac II version is a great design; none of that Velcro mess, the cover just slides right onto the front of the monitor. ($99.95)

And her posture is terrible. Might have something to do with the workstation. Let's get her a **MacTilt** from Ergotron so she can adjust her monitor to a more comfortable angle. She can swivel it a full 180 degrees to the right or left and tilt it up or down a total of 30 degrees. That should get her smiling again. (For Mac II $79.95.)



Something Fishy

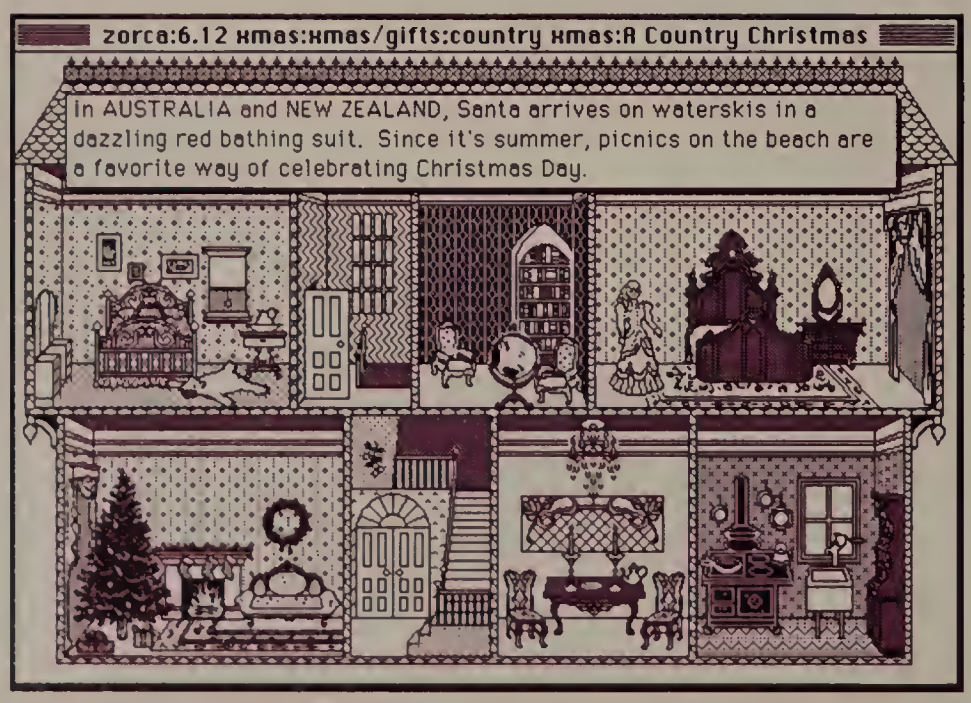
You can edit the marine life in the animated start-up screen program, Fish. Besides being able to create new creatures and evolve the old, you can use the Motion command to define where your aqueous animations will appear on screen.

'Tis the Season

Then I have to get something for old Gregor. In honor of his eternally tardy software releases, let's send a **WristMac.** It lacks the pizzazz of the old Dick Tracy model, but this modified Seiko comes with software that will let Gregor download his address book, appointment schedule, and—more important in his case—To Do lists from his Mac. The data will have to fit into two 12-character lines, but the WristMac can keep track of up to 80 screens.

There's an edit button on the WristMac, but since Gregor isn't likely to bother cycling through the alphabet to change entries character-by-character, I don't think I'll throw in the Bi-Directional Adapter that would let him upload WristMac data back to the Mac. Be sure to get that snob the Executive version, the one with the gold accents on the face. (Executive $295; Pocket WristMac $260; Standard $225; Bi-Directional Adaptor $45.)

And let's send Esmeralda over at Try Again Software a **Wizard Electronic Organizer** from Sharp along with **Palm Top**



Holidays Around the World

Have you ever wondered how other cultures celebrate the holiday season? Clicking the mouse over the spinning globe in the upstairs room of this dollhouse in B&B Soundworks' HyperCard stack, A Country Christmas, brings up message boxes that offer brief glimpses into the traditions of other countries.

Link for the Macintosh software and cables. Her products have been even slower to hit the market than Gregor's, and she's always quoting one excuse or another. Because the Wizard is checkbook size, its screen can display up to 8 rows of data with 16 characters in each. Now she can catalog all her rationalizations, and keep track of her daily, weekly, and monthly schedules, memos, and telephone lists, to boot. The Wizard also has a Calculator function that will let her figure the cost of her vaporware, and she can use the Secret function to hide her real release dates from the rest of us.

Esmeralda might input data using the Wizard's alphabetical keyboard and, using the WizardLink software and cables, she can shuttle files, even those created in other Mac applications, back and forth between her Wizard and her Mac. (Wizard $299; WizardLink Mac $149.95, including software and cables.)

And let's send each of our VPs one of those new **Portable Packs** from Farallon Computing. The hardware and software kits really seem to live up to their billing as the Swiss Army Network. Because the Packs let you connect any Mac to any phone line, communication between our top execs ought to be a lot more streamlined, even when they're on the road. Besides containing a couple of PhoneNet StarConnectors and extension cables, a PhoneNet to LocalTalk Adaptor Cable, and a handy selection of hardware accessories, it comes with two copies each of Timbuktu Remote and Timbuktu 3.0. Plus you get a handy multitool knife, and it all fits in a pouch about the size of a shaving kit. ($495)

Kids from One to Ninety-Two

I guess I jumped the holiday season a bit when I gave **Cosmic Osmo** to Minerva, my six-year-old niece. It's a nonstructured HyperCard adventure, a lot like that other program from Activision, **the Manhole**. Minerva loved flying the bulbous spaceship between the various planets; she especially enjoyed firing cotton-swab projectiles at the Holy Mackerel. What kept her coming back, though, was the fact that she could write and record songs on the instruments she found lying around. Let's give one to what's-his-name's kid—the guy who just wrote that book that's supposed to tell all about our company. Just to show there are no hard feelings. Better make sure they have a hard disk at home, though. Osmo takes up five 800K floppies. ($69.95)

I worry about Minerva's brother, Max. The kid just seems to sit and stare. He used to divide his time between the television and his aquarium, but now he spends those endless hours in front of his mom's Mac II watching the cursor blink. Of course, he's only four. Maybe what he needs is **Fish,** a CDEV from Tom and Ed's Bogus Software that turns the Mac desktop into an animated sea scene. The minnows, sharks, and octopuses that come with the program slither behind any open windows in 2-, 8-, or 32-bit color, but I think Max is really going to like creating his own animated denizens of the deep (see "Something Fishy"). Maybe it'll even encourage him to head for the beach and angle for some real fish once in a while. ($19.95)

Giving **Tyler** to my mother could be a bit of a gamble. All our lives she's badgered us into playing Scrabble with her. Once she gets her hands on this game with its three dictionaries and variable playing levels, we may never get her away from the screen again. If she starts taking after her father, who never lost a game of solitaire, she might want to explore the Cheating menu. Of course I've never explored those options ... ($50)

And let's see ... ah yes, my niece Maggie—one of those teenagers who seem uncomfortable unless they're clutching a telephone receiver. I know that what she'd really like is her own fax setup to send photos of her new dreamboats to her friends, but I think I'll give her my favorite Rolodex-like application, **QuickDex** from Casady & Greene. This desk accessory's search abilities are faster than Santa's reindeer, and—Maggie's going to love this—if you hold the phone receiver to the Mac's speaker, QuickDex will automatically dial a number by generating the necessary phone tones. She can share all or part of her list with select friends using the companion utility, PrintDex.



The Mac II in this photo is equipped with Kensington's Large Screen Anti-Glare Filter and a MacTilt from Ergotron. The marbelized ExecutivePad is from Computer Giftware and the floppy disk labels and pens come with MultiComp's Label-Once kit.

My only complaint with QuickDex used to be that it was incompatible with **QuickFolder**, a great INIT. I like having the option to create a folder whenever I save a file. I'm glad the QuickDex bunch bought QuickFolder. Now, not only are the two compatible, they also come packaged together. ($60)

There Arose Such a Clatter

It's been tough picking out a gift for my boy, Teddy. He fancies himself some kind of performance artist. His "art" seems to consist mostly of moping in front of a slide projector and a tape recorder. Getting a Mac into the act might spark things up. With Farallon's **MacRecorder** sound digitizer he can record all the rude noises he wants and manipulate them to boot. The new HyperSound Toolkit will let him record and play back his sounds in stereo, and the 8:1 compression ratio means I won't have to toss a hard disk into the deal. (MacRecorder 2.0, microphone, cables, HyperSound Toolkit, and HyperSound and SoundEdit software $249.)

And send him ***The Waite Group's Tricks of the HyperCard Masters*** (Hayden Books, 1989). This book, written by real scripting pros, is the best HyperCard resource around. If Teddy were projecting images and animations from an interactive stack, the act would certainly be more interesting. ($24.95)

Of course, Teddy will never go for this if he has to key in all those scripts, so we'd better include Heizer Software's ***Tricks of the HyperCard Masters: The Stacks.*** Besides being able to see examples of all the stack ideas in the book, he can cut and paste the scripts into his own stacks. ($15 for each of the four stacks: Main Tricks; Sound and Front Ends; Developer's Tool; and Complete HyperTalk Reference. $50 for the set.)

And what the heck, let's include the new **interFACE.** Like HyperAnimator, its precursor, it enables you to create animated talking heads with facial expressions that are synchronized to either digitized or Macintalk speech. We may as well include the royalty-free run-time driver, so if Teddy likes, he can distribute files with scanned images of his own face lip-syncing to his recorded monologues and he won't even have to attend his own performances. (InterFACE $499.95; run-time driver $500.)

Farallon's Portable Pack is a boon for Mac users on the go; as is the checkbook-size Wizard Electronic Organizer with its PalmTop Link for the Macintosh software and cables. The WristMac is even more compact. Adding digitized sounds to your Mac is a snap with the MacRecorder, and the Discalculator just adds up to fun.



Heaven and Nature Sing

Truth is, my sister Maude is the only one in the family with an ear for music. She actually fancies herself a bit of a musicologist and likes to point out that the earliest musical recordings were actually mechanical devices a lot like our present-day music boxes; they were a lot more complicated, though, with bells, plucked strings, and organ pipes. None of the instruments survived, but a couple of computer musicians, David Kraehenbuel and Christopher Light, did manage to re-create some pieces by the likes of Bach and Haydn and even Beethoven, using a Mac in conjunction with a Sequential Prophet 2002 sampler and a Yamaha TX81Z FM tone generator. Reminds me of carousel music. It's from Product Concepts and it's called the **Ultimate Music Box.** ($6.95 plus $2 s/h for the cassette tape; $14.95 plus $2 s/h for the CD.)

Send it along with **Gorillas in the Mix,** an exotic patchwork of digitized animal sounds from Rykodisc USA. The artist, Bernie Krause, takes honest-to-gorilla zoological sounds and uses the Mac to juggle them into honking, squawking dance ditties. Maude used to really cut the rug. "Ape No Mountain High Enough" and "Trout from Ipanema" ought to get her old toes tapping. (Cassette $9.98; compact disk $13.98.)

Her twins, Marilyn and Monroe, are nearly school-age now. I think they'll appreciate **A Country Christmas** from B&B Soundworks. It's a charming HyperCard stack that will keep them in the holiday spirit for days. It illustrates customs around the world, quaint old-fashioned family scenes, a great snowball game, a very realistic dollhouse, and recipes; and carols play in many of the scenarios. Rather reminds me of my own youth. ($34.95)

Let Nothing You Dismay

My niece, Thalia, was really shaken when some jokers broke into her dorm last fall and lifted her Mac and peripherals. I already replaced the equipment, but let's send her the **Kensington Apple Security System.** The cables, locks, and adapters look pretty tough. Not exactly a fun gift, but it could guarantee her some peace of mind. ($49.95)

And while we're at it, let's send her **SUM II.** It's a utilities program from Symantec that duplicates floppies in a flash; partitions and encrypts hard disk volumes; defragments disks; watches for known viruses; and even keeps track of the hard disk directory. The new version will even back up her files, among other niceties. ($149.95)

And for a more cheerful gift, let's include a few of those **Custom Trackballs** from Kensington. She can just drop one into her regular Kensington Trackball setup. I don't know if she'd rather have a red pearlescent ball or a green speckled one or even an eight-ball, so send her a selection. (Colored balls $12.95 plus s/h; for the eight-ball $17.95 plus s/h.)

The Stockings Were Hung

When you hand out the holiday bonuses to the folks down in sales, why don't you give each of them a **Discalculator** from The Computer Giftware Company, as well. It's kind of frivolous—a solar calculator that looks like a 3½ inch floppy—but I think it'll add a nice touch to their stockings. ($19.95)

And for that image-conscious bunch down in marketing, why not pick out an assortment of faux-marble mousepads—**ExecutivePads,** from Computer Giftware. They come in several colors, fake granite, and even a burled wood look. ($14.95)

As for the others out in the field, let's send all of them **MicroStore Disk Wallets.** I use one myself. I like it because it's made of heavy-gauge nylon and the disks don't fall out. (4-disk wallet $8.95; 12-disk $16.95; 32-disk $34.95.)

And hand out boxes of **DataRescue Diskettes** from Polaroid's Magnetic Media division. Sounds like a great guarantee: If the disks become unreadable for any reason—even if you spill industrial-strength coffee on them—Polaroid will try to recover the data and return the disk for free. The company says its success rate is 100 percent with smoke- and liquid-related damage and 95 percent with hard logic errors such as accidental formatting or erasure. (Box of 10 Mac-formatted disks, $13 to $18, depending on distributor.)

And I'm tired of getting floppy disks with illegible writing and scratched-out identifiers, so give everyone a **LabelOnce** kit from Multicomp. The Starter Kits come with disk labels that let you erase and rewrite whenever you like, as well as a pen, a spot eraser, colored stickers for coding and a small bottle of eraser fluid. (Starter Kits come with 50 labels, $13.95; other size kits available.)

What to My Wondering Eyes

And see what you can do about getting a few packages of holiday clip art for Bill, the guy who does the office newsletter. **The Moonlight Artworks Holiday Set** from Hired Hand Design comes with two disks crammed with 90 EPS illustrations. Could be good year 'round. Besides the wreaths, canes, menorahs, and angels, there are turkeys, bunnies, jack-o'-lanterns, flags, and hearts. ($59)

The **Wet Paint Special Occasions** disks from Dubl-Click are even more densely packed with holiday images, most of which are scanned from arcane sources. You may recognize some of these pictures (I know you all laugh at my memos), but there are three disks full of curious images, so I doubt that anyone will complain. ($79.95)



Besides offering faux-cowhide Mac Cozies, Future Studio also makes leopord skin, Hawaiian print, and even custom covers. Polaroid's Data-Rescue Diskettes provide one kind of dota security; MicroStore Disk Wollets provide onother. And the Macinware SE Extended Carrying Cose protects the Mac itself.

And to All a Good Night

Well, Scrumbley, that's about it. Can't think of anyone I've left out . . . oh yes, of course. Please ring downstairs and tell them to deliver that IIci you've been hinting about. And let me know what you think—I've been too busy to spend any time with it. ◘

See *Where to Buy* for contact information.

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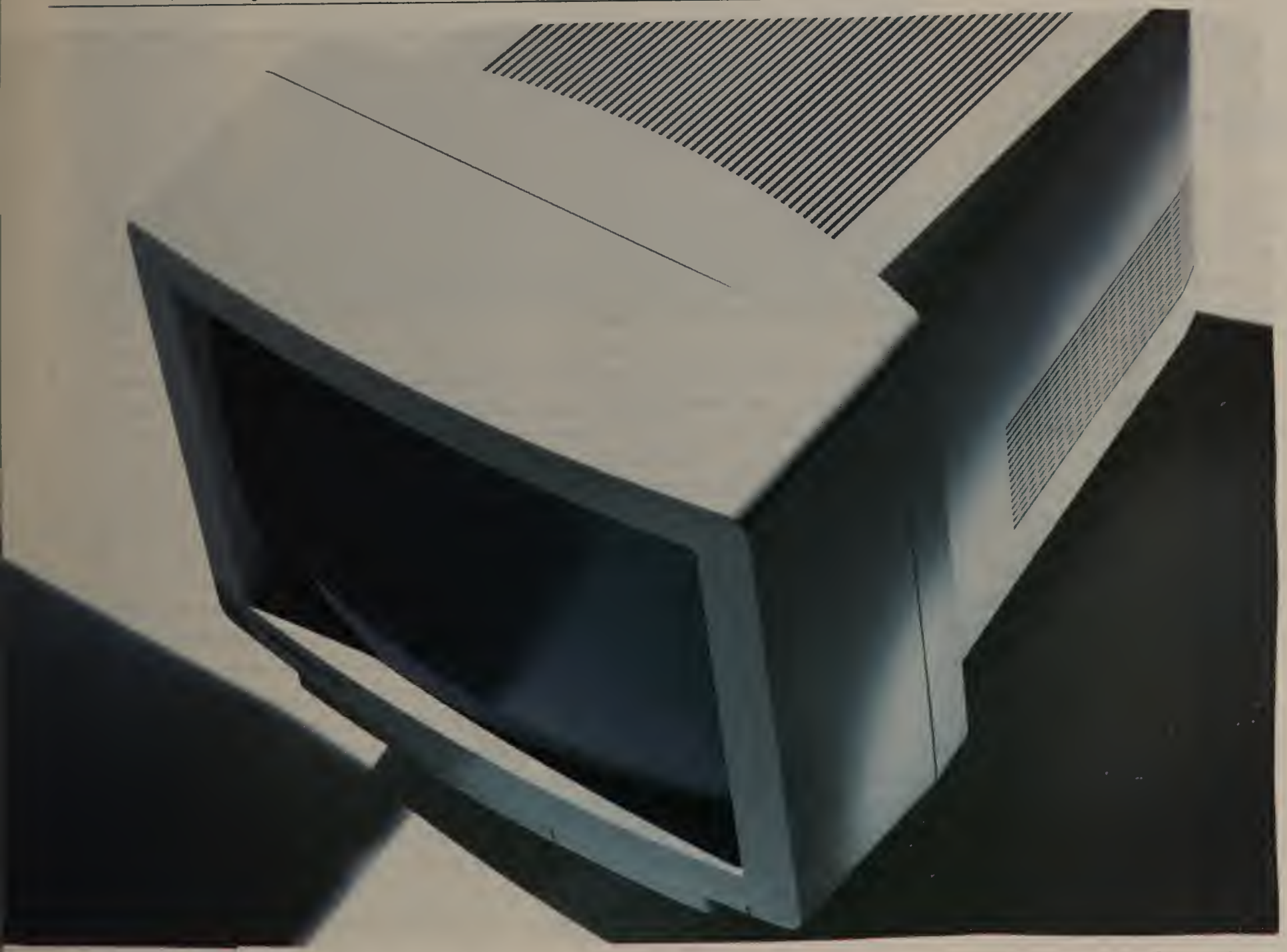
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REVIEWS

PIXELPAINT PROFESSIONAL 1.0

24-bit Color Paint Program

Pros: *Well-designed user interface; variety of effects can be applied with any tool; good control over color blending.* ***Cons:*** *A few bugs.* ***Company:*** *SuperMac Technology.* ***Requires:*** *Mac II; 2MB RAM, 24-bit color video board. System 6.0.3 and Finder 6.1; 32-bit QuickDraw.* ***List price:*** *$699.*



Even after several weeks, I still get a thrill out of opening the Control Panel and choosing to work with *16 million* colors. With PixelPaint Professional, you can take advantage of the full range of color offered by the Mac, rather than the 256 colors that have been available with 8-bit setups. You can use the program to create color paintings from scratch, to colorize images created in other graphics programs, or to retouch scanned images. PixelPaint Pro lets you import TIFF, MacPaint, and EPS files, and includes a utility that lets you open color or gray-scale images created with Howtek's Scanmaster or the JX-450 scanner from Sharp.

PixelPaint Professional builds substantially on the capabilities of SuperMac's 8-bit program, PixelPaint. But even if you've never used PixelPaint, you should have little difficulty learning PixelPaint Pro, thanks to the program's superb user interface. Its tool palette holds the standard array of graphics icons: the standard paintbrush, pencil, eraser, airbrush, paint bucket, and line- and shape-drawing tools. An eyedropper tool lets you pick up any color and paint with it. The palette holds two tools for softening edges and blending colors: a water drop and a finger tool.

Versatile Tools

Just because the tool palette looks lean and clean, don't think the tools themselves are limited. Double-clicking almost any tool icon brings up a dialog box that lets you modify the tool. For example, the paintbrush dialog box lets you select from among 64 predefined brush shapes, create a custom brush, and set the rate at which painted pixels flow from the brush. In addition, when you select a tool, a menu appears for that tool, allowing you to pick a drawing style—freehand, polygon, or spline curves—and whether to use plain paint or any of a variety of effects. If you check the Effects option, you can proceed to the Effects menu, which offers options such as gradient fills, shadows, smoothing or sharpening a selection, or lightening or darkening an area, as well as exotic effects such as Emboss, Mosaic, Posterize, and Warp.

I like the idea of applying effects to any tool, but this approach didn't make sense to me in some cases; for example, I doubt I'd apply a shadow effect or a gradient fill to the eraser tool. Similarly, I found little use for the polygon and spline drawing options with most of the tools; I don't find spline curves very useful unless I can move their control points, as in Illustrator 88 or FreeHand. On the other hand, it doesn't hurt to have the effects and the drawing modes universally available.

Who Was That Masked Pixel?

In addition to the obvious enhancement of adding several million colors, PixelPaint Professional improves on the original PixelPaint in many respects. Many artists will find PixelPaint Pro's masking option indispensable. With masking selected, you can protect selected colors as you paint (see "Skybox"). Or you can reverse the mask and apply color only to the masked area. An Add Last To Mask option lets you select a region with the lasso or marquee tool and add it to the mask.

Another notable enhancement is PixelPaint Pro's antialiasing feature. (My Auntie Flo used an alias for many years, but that's another story.) When antialiasing is selected, the edges of shapes and lines are softened, making your artwork look more like paint and less like pixels. If you want a jagged, sharp-edged effect, however, you can turn off antialiasing. The antialiasing feature really shines when you type text, which looks considerably better with smoothed edges.

Other impressive new features include the ability to adjust the transparency of paint; gradient fills that blend from one true color to another, rather than through intermediate colors in the palette; an Autoslip option that lets the selection tool "slip over" colors to select an area on a multicolored background; and the ability to select tools with keystroke commands.

Pick a Palette

PixelPaint Pro lets you work with four 256-color palettes at a time. You can choose from the program's built-in palettes or create your own. Unfortunately, computer artists have no universal model for working in color. PixelPaint Professional addresses this situation by offering no fewer than seven ways to pick colors: Pantone colors, CMYK process colors, Apple's Color Picker, RGB (red-green-blue), HSV (hue-saturation-value), Color Theory (relative positions on the color wheel), and a Color Mixer, which allows you to use tools such as the water drop to mix colors on screen as if you were blending acrylics or oils.

The manual does a good job of explaining each color selection method. If you intend to print your artwork, you can send it to a color thermal printer or a film



RON COBB

Skybox

To create this image, Ron Cobb used several of PixelPaint Professional's unique tools. He used transparency and the pencil in FatBits for the gradual buildup of the cloud tones. The antialiasing and the resulting subtle midtones were used to increase the apparent clarity of the image.

recorder, or create color separations with the program's PostScript Printing Control dialog box.

PixelPaint Pros and Cons

I came across a few glitches when experimenting with PixelPaint Pro. For example, the finger tool didn't work properly when I zoomed into a drawing; also, the pencil behaved erratically in the enlarged view. I couldn't get the enlarged view of the eyedropper to work. Finally, when I selected large areas when working in MultiFinder, the program occasionally froze.

Also, several of my graphics programs didn't take kindly to 24-bit video; with SuperMac's Spectrum/24 board installed, MacPaint 1.5 crashed (MacPaint 2.0 works fine, however) and SuperPaint 2.0 refused to start until I removed the 32-bit QuickDraw file from my System Folder. With other graphics programs, such as MacDraw II and FreeHand 2.0, I had to remember to reset the number of colors to 256 in order to work in color. Depending on the hardware and software you use, you may have to experiment with color settings to get other programs to work properly.

My wish list for PixelPaint Professional includes better text-handling (leading, kerning, and so on), the ability to open multiple documents, and the ability to preview both images for positioning when merging two drawings.

These complaints are minor, however, when PixelPaint Professional is viewed as a whole. The program's well-conceived interface and solid manual make it easy to learn and use, and artists can customize tools and color palettes to their liking. Features such as antialiasing, masking, and control over transparency make PixelPaint Professional an ideal tool for creating original artwork or for image processing. I wholeheartedly recommend this program.

(A note for those who have 8-bit video boards: PixelPaint Pro works in 8-bit mode, though of course you can only use 256 colors at a time. If you have an 8-bit system, you might look into PixelPaint 2.0, which features numerous enhancements over the original PixelPaint, including masking, Pantone colors, and color separations.)—*Erfert Fenton*

See Where to Buy *for contact information.*

ALDUS PAGEMAKER COLOR EXTENSION 1.0

DTP Color-Production Extension

Pros: *Simplifies and reduces steps in color prepress work for PageMaker users; almost exact accuracy in density of final output.* ***Cons:*** *Cannot print separations from within program; doesn't color-separate non-PostScript formats.* ***Company:*** *Aldus Corporation.* ***Requires:*** *Mac Plus; PageMaker 3.0 or later version. Mac II with color monitor recommended.* ***List price:*** *$195.*

In the desktop publishing wars, color prepress production has become the big issue. While ease-of-use, length of learning curves, and degree of flexibility are debatable, being able to do color prepress work from a page-makeup program is definitive—a program either can or it can't. For PageMaker users interested in getting color prepress work from their desktop, the program's inability to separate color specified in type, tints, lines, and boxes from within PageMaker was the fortress wall that begged to be scaled.

Scaling the Walls

This is not to say that you couldn't get process color plates from the old PageMaker. But that involved speccing color from within a color PostScript illustration program like FreeHand or Illustrator, placing those color elements in PageMaker pages, encapsulating those pages individually, and separating the files with another program, like Adobe Separator. This process was tedious, and it soon became clear that at some point PageMaker would have to let you specify and separate process color without relying on third-party applications.

When Everything Old Is New Again

PageMaker Color Extension merely extends PageMaker 3.0's color capabilities. It comes with Install and Program disks that work only if you have PageMaker 3.0.

Color Extension retains the identical Define Colors dialog box in the current

(continues)

version of PageMaker. You can specify colors from a Pantone Matching System (PMS) library of over 700 colors, or you can use RGB (red-green-blue), HLS (hue-lightness-saturation), or CMYK (cyan-magenta-yellow-black) models. These colors are now much more than spot-color models. With Color Extension, any of these colors can now be interpreted into process colors; you can now get four pieces of working production film off a high-resolution imagesetter like those from Linotype or Agfa Compugraphic. Color Extension begins to help PageMaker's color capabilities mature from a glorified coloring book to a powerful high-resolution color palette.

Aldus wisely includes the Process Color Card, which you hold up to the screen to determine how close you've come to matching a particular color. No color matches are guaranteed. Because of such variables as monitor and output-device discrepancies, the advice on the Process Color Card should be taken to heart: you should consult with your service bureau and check your printer before producing output.

The color output I produced from Color Extension files, separated through Adobe Separator, with film output from a Linotronic 300, produced color accurate enough for any top-quality magazine. Densitometer readings for discrepancies among screens fluctuated between 2 and 6 percent, which is an entirely acceptable margin of error.

Stumbling Around

While the overall results from the tests were encouraging, a minor problem arose that required me to second-guess Color Extension's meager documentation.

For one test in particular, I needed type to reverse out of a color background (see "Don't Forget"). The type would not reverse out on Linotronic output until I discovered, when I called Aldus, that the new Cutouts check box in the Print dialog box needed to be checked to create the effect I wanted.

While this proved effective for reversing type out of a color background, the problem persisted when I tried reversing white type, even with the Cutouts check box turned on. The workaround solution: specifying 1 percent for cyan, magenta, yellow, and black on the reverse (white) type produced the effect I wanted.

The manual also says to uncheck the Include color images check box in the Print Options dialog box "if you are printing color separations." But color images that I'd intended to leave as black-and-white FPOs (for-position-only placeholders) disappeared on my Linotronic output.

If there had been references in the manual to features like the Cutouts check box and more detailed descriptions of other new features, I could have saved both time and money.

One other important new feature that comes with Color Extension is the ability to place and print color TIFF images to desktop color printers from within PageMaker. Other neat commands enable you to place and see the choice of either high-resolution or low-resolution versions of a TIFF image, as well as to compress and decompress the often mammoth TIFF files as they appear in a PageMaker document. However, you still cannot create color separations from TIFF files from within PageMaker; you need third-party separation software.

There's the Rub

The ability to separate TIFF files from within PageMaker is an example of what I'd hoped for and did not get with this release of Color Extension. While Color Extension removes a step or two in the cumbersome color prepress production of pages in PageMaker, it still is not ideal.

Aldus released Color Extension before work was completed on Aldus Separator, its own separation utility. Thus, the consumer is forced to rely on third-party separation products. Of more concern is the direction this development path will take PageMaker. Our dependence on PostScript-compatible separators inextricably ties PageMaker to PostScript color, without including color separation of other formats, including color TIFF and color PICT. We can only hope that Aldus has a more encompassing strategy in mind. We might better understand that strategy when we can work with Color Extension's hooks to the Open Prepress Interface, a DTP standard to link up to high-end prepress systems. With OPI still in its infancy, there was no way for me to evaluate its potential.

Publishing in the Hands of the People

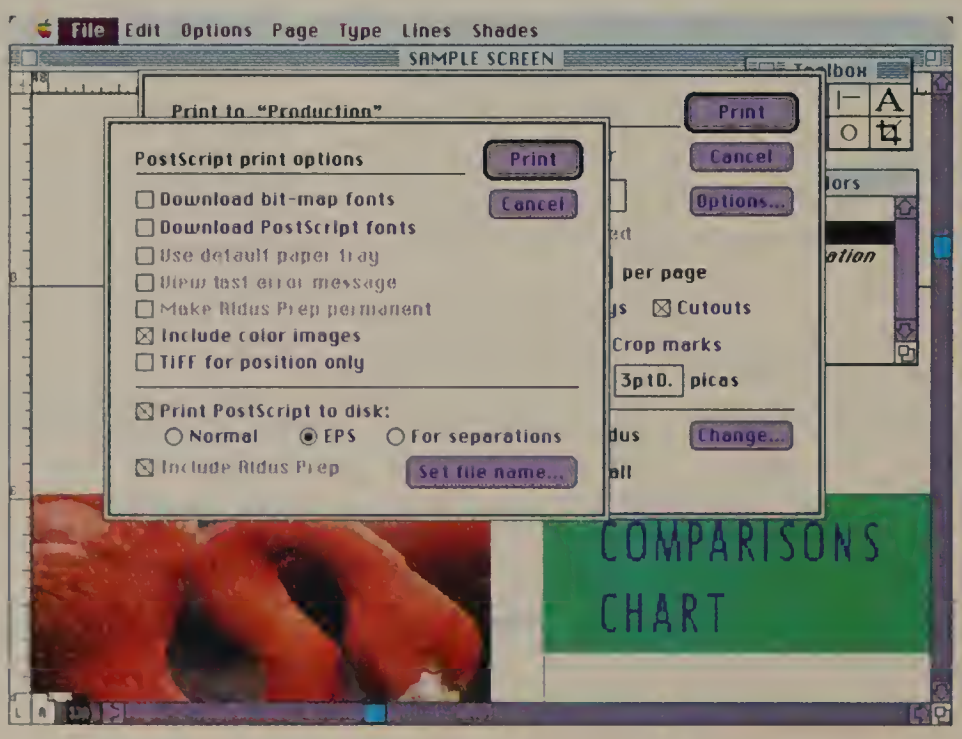
While Color Extension does a great service to the legions of PageMaker users who are now exploring the higher end of desktop publishing, a fully composed page with mechanical color, photos, and illustrations, untouched by a human stripper's hands, still remains a dream.

Nevertheless, Color Extension is an important product that continues to make high-end output more accessible to lower-end desktop publishers. Any product that helps to put quality publishing in the hands of PageMaker users is worth the $195.—*Luis Camus*

See Where to Buy or circle 704 on reader service card.

Don't Forget

Note the check boxes in Color Extension's dialog boxes to avoid missing art and color type. Check Include color images in the PostScript print options to make sure your non-PostScript color images print as black-and-white placement holders. If you have color type reversing out of a color background, check Cutouts in the Print dialog box.





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SMART ART I, II, III 1.0

PostScript Effects for Type and Graphics

Pros: *Desk accessory; lets you view effects on screen before printing.* ***Cons:*** *Doesn't work with most draw and paint programs.* ***Company:*** *Emerald City Software.* ***Requires:*** *Mac Plus; PostScript-compatible laser printer.* ***List price:*** *$149.95 per volume.*

A PostScript laser printer has powerful text-manipulation features built in to it. PostScript can perform all sorts of tricks with type: rotating it at any angle; filling letters with shades of gray; outlining, compressing, or expanding characters; adding a drop shadow; even setting text on a circle or arc. A fat lot of good all that does you, however, if you can't access the effects.

PostScript graphics programs such as Adobe Illustrator and Aldus FreeHand let you fill, skew, rotate, compress, expand, and otherwise reshape type. But what if you work with a word processor or page-layout program that doesn't offer these snazzy effects? That's where Smart Art comes in.



Smart Art Sampler
Shown here are some of Smart Art's effects; Centered Arc, Starburst Text, Movie Title, Raised Text, and Distance Text.

Smart and Ubiquitous

Each Smart Art volume (there are three at this writing) is a collection of 15 PostScript special effects, packaged as a desk accessory so that you can call up the effects from virtually any program. Volumes I and III offer text effects, while Smart Art II focuses on graphics. Say you're typing an announcement in Microsoft Word and want to add a drop shadow to emphasize a headline. No problem. Simply choose Smart Art from the Apple menu, open the appropriate effect, tailor it to your specifications, and paste it into the document.

In the Smart Art window, you'll see a list of text attributes (see "Tinkering with Type"). Highlight a line and type up to 255 characters of new information to change the sample's wording, font and font style, size, shade of gray, and other attributes such as shadow angle, character spacing, circle or arc size, or character width, depending on the effect you've selected. Smart Art's text effects work not only with your printer's built-in fonts, but with downloadable PostScript fonts from Adobe and other type vendors.

When you think you've created the effect you want, click the Reimage button. Smart Art carries on a dialog with your printer, which in turn performs the PostScript calculations necessary for your custom effect. Unlike other text-effects programs, Smart Art doesn't leave you in the dark, wondering until you print it out what your effect looks like; the effect constructed by the printer is displayed on the screen as well. If you don't like what you see, you can adjust the effect, send it to the printer again, and preview it on the screen until you get it right.

When you're satisfied with an on-screen effect, you can either cut it to the Clipboard and paste it into your document, or save the effect as an EPS (encapsulated PostScript) file and paste it into a document created with any program that accepts EPS images (these programs include Cricket Presents, Aldus Persuasion, FreeHand, Illustrator 88, and page-layout programs).

It's Smart, but Is It Art?

Smart Art I's 15 effects fall into the basic categories of rotated text, text on a circle or arc, text in perspective, and shadowed text. Smart Art II offers 15 graphics effects, including 2-D and 3-D shapes that you can rotate, resize, fill with shades or patterns, and otherwise edit. Smart Art III adds 15 text effects to the DA's repertoire, including drop caps, arched text, inlines and outlines, and flashy effects like neon, two-tone text, and outlined letters filled with text (see "Smart Art Sampler").

I found Smart Art I's effects somewhat limited in scope compared to those of PostCraft's LaserFX, another text-effects utility. While Smart Art III brings the total number of text effects to 30, it also brings the total cost to around $300. (PostCraft sells $50 add-on modules to augment the 30 effects in its original $200 program.) Smart Art II's graphics effects are a mixed bag; many of the 3-D effects are impressive (you can move a light source, for example), but I was less than impressed by 2-D shapes such as the rectangle and the circle, which almost any graphic program could create.

Smart Art requires a 300-dpi printer with Adobe's version of PostScript if you want to preview your effects on screen. According to Emerald City Software, however, the effects will print on a PostScript-compatible printer or a Linotronic PostScript imagesetter, although you will not be able to preview the effects as you work on them.

Although many of Smart Art's effects travel from printer to screen in less than a minute, be forewarned that the calculation time can increase considerably if you're sharing a printer over a network. You should also bear in mind that Smart Art doesn't work with a few programs, notably SuperPaint, Canvas, MacDraw, and bitmapped paint programs; in these applications, an effect will print as a bitmap rather than as PostScript.

In general, the program is easy to use; a graphics-oriented interface shows you

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how your changes will look as you modify each effect. I have a beef with Smart Art I's use of the term *track kerning*, however. Tracking adds or subtracts an equal amount of space between every letter in a word, while kerning lets you adjust the space between a single pair of letters in a word. Since the Smart Art option called track kerning adjusts the spacing equally between all the letters in a word, it should be called simply tracking. Fortunately, Smart Art III rectifies this problem, providing true pair kerning as well as adjustable leading.

Effective Effects

On the whole, I found Smart Art I a pleasure to use. It's readily accessible since it's a desk accessory, it lets you tweak its basic effects, and—best of all—it lets you preview effects on screen before you print them.

I encountered no problems placing Smart Art effects into documents created with MacWrite, Microsoft Word, Illustrator 88, QuarkXPress, and PageMaker. If you already own a PostScript graphics program like FreeHand or Illustrator 88 you may not need Smart Art, since you can duplicate many of its effects with those programs. On the other hand, creating text effects is a time-consuming process, and even owners of graphics programs will appreciate having canned effects available under the Apple menu in any application.—*Erfert Fenton*

See Where to Buy *or circle 839 on reader service card.*



Tinkering with Type

The Smart Art window offers prefab text effects and lets you adjust various attributes, such as font size and style and shadow angle. The program then lets you preview your handiwork on screen before printing it.

FASTBACK II 2.0

Backup and Archiving Program

Pros: *Easy to use; fast floppy backups; allows differential backups.* ***Cons:*** *Slow tape backups.* ***Company:*** *Fifth Generation Systems.* ***Requires:*** *Mac 512KE; hard disk.* ***List price:*** *$189.*

RETROSPECT 1.0

Backup and Archiving Program

Pros: *Fast tape backups; one-step archiving; handy log file; file encryption.* ***Cons:*** *Runs out of memory at inconvenient times.* ***Company:*** *Dantz Development Corporation.* ***Requires:*** *Mac Plus; hard disk; System 6.0.* ***List price:*** *$249.*



Over the past two years, the Mac market has been inundated with new and revised backup programs, each promising to be a little easier to use than the rest and to make the backup process more tolerable. The differences between programs, however, have often been minor. Retrospect 1.0 and Fastback II 2.0 have much in common with other backup programs and with each other. Each offers full and incremental file-by-file backups, MultiFinder and AppleTalk network compatibility, scheduled backups, macros, and setup scripts. What's new is the device-independent support of these two programs and their archiving capabilities.

Device Independence

If your backup hardware isn't Finder-mountable (visible on the desktop) your only option has been to use the backup software that comes with the device. If it's easy to use, fast enough, and offers the options you need, you're in business. If there are shortcomings, all you could do until now was hope for an upgrade.

Fastback II and Retrospect, however, work with almost any SCSI device (mountable or not)—including tape drives, removable hard disks, Bernoulli drives, WORM drives, read/write optical drives, and floppy drives. Currently, Fastback II does not work with the Apple Hard Disk 20 serial (non-SCSI) hard disk and the Exabyte tape drive. Retrospect does not work with Digital Audio Tape (DAT) or Video-8 drives. (According to both companies, these incompatibilities will be corrected shortly.)

Benchmark Results

Backup speed is a concern, particularly if you need to stay around during backups. "Fastback II vs. Retrospect" shows the results as megabytes per minute. I used a standard 1MB Macintosh Plus, an Apple Hard Disk 20SC with 14.3MB of data. I backed up to an Irwin 5080 (80MB) tape drive. To improve speed performance, I ran Fastback II with a 64K RAM cache, with its error-correction feature turned off. (Most tape drives provide their own error correction.)

Using no data compression, Retrospect was almost twice as fast as Fastback II. With compression the times were similar. The maximal compression achieved by both programs was about 24 percent, reducing the storage space from 14.3MB to about 11MB. Fastback II's minimal compression routine shrank the space by 900K, but more than doubled the backup time. Backing up the same hard disk to floppies (no compression) took 20 minutes with Fastback II and 27 minutes with Retrospect. The programs used 21 and 19 disks respectively. (The greater number of disks for Fastback II can be attributed to its error-correction routine.)

Times will vary depending on the amount of RAM available to the program and your hardware configuration. Tape can only move as fast as the drive allows. Backing up quickly with Retrospect requires that the drive be fed data continuously. The faster the CPU and hard disk, the more likely that the tape drive won't have to wait for data.

Notable Differences

Retrospect has been optimized for tape backups. Retrospect also offers several archiving features that set it apart from Fastback II. First, you can back up, verify, and automatically remove files from the

(continues)

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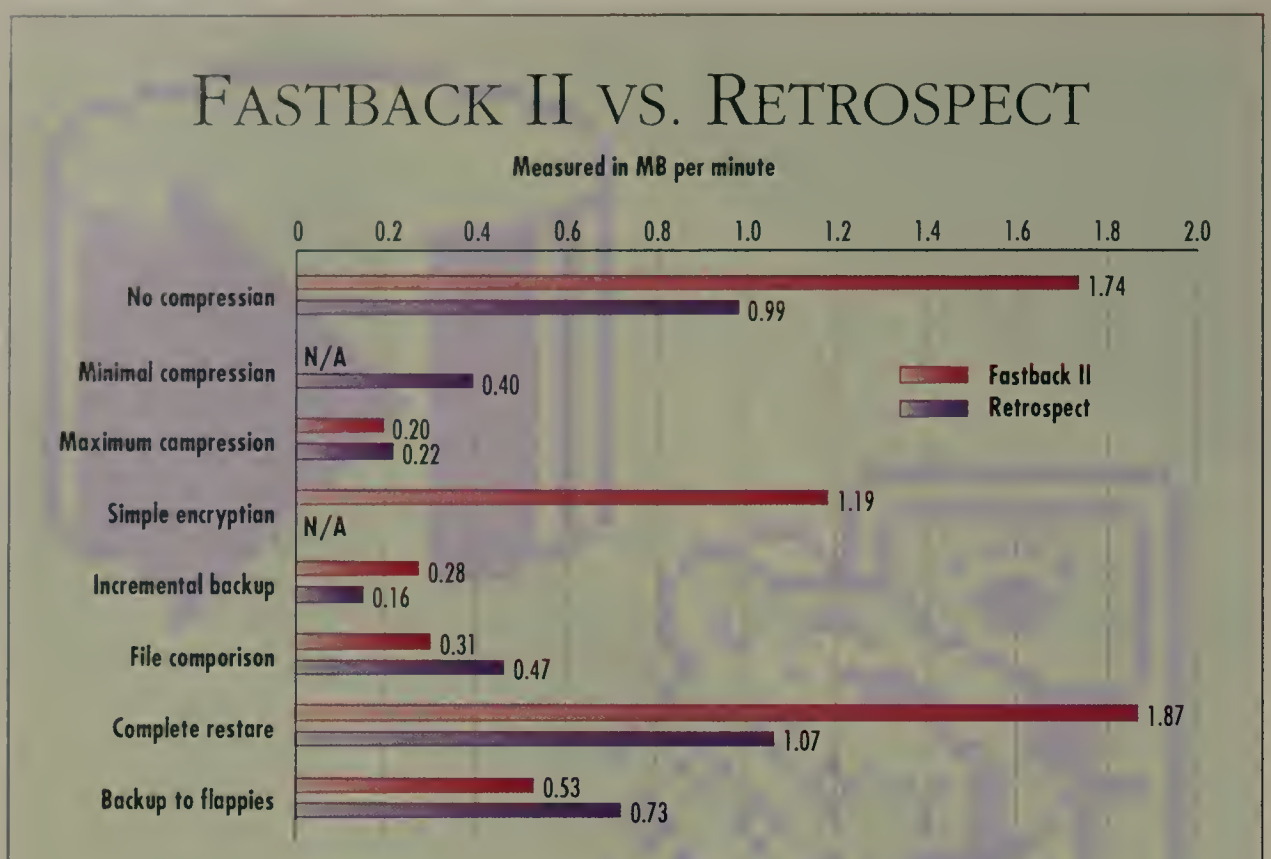
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Results from eight backup tests: a full backup (14.3MB) to tape without data compression, with minimal compression, and with maximum compression; a full backup with simple encryption (no compression); a 550K incremental backup (no compression); a tape-to-hard-disk file comparison (maximum compression); a complete restoration of the hard disk (no compression); and backup to floppies.

source hard disk as part of one backup operation. In Fastback II, files must be manually dragged to the trash. Having the trash as an optional part of the archiving procedure gives you a chance to retrieve files if you've deleted them by accident. Second, archived or backed-up files can be password-protected or encrypted for added security. SimpleCrypt (a quick encryption routine) and DES (the U.S. government standard for data encryption) are included in Retrospect.

Retrospect also keeps a log file that automatically records all backup activities. If you want to see how last night's unattended session went, or you can't remember the type of backup that you made last Wednesday, the log quickly provides the answer.

Fastback II does a reasonable job with tapes, but it works best with floppies. Even counting the time it takes to swap disks, it routinely handles between 750K and 1MB of data per minute. In addition to being fast, Fastback writes error-correction information to each backup disk, allowing the backup disk to be reconstructed even if as much as 10 percent of the data on it has become corrupted.

Both Fastback and Retrospect allow you to make incremental backups, copying only those files that have changed since the last backup, regardless of whether it was a full backup or another incremental backup. Fastback II also offers differential backups, which copy any files changed since the last complete backup. Incremental backups often leave you with multiple copies of some files (each time a file has changed, it will be backed up), whereas a differential backup copies only the most recent version of each file.

Differential backups have several advantages. First, there is the space savings. Because each backup completely supersedes the previous one, the same media can be used. Second, if a full restore of your hard disk is ever necessary, the procedure is fast and easy: restore the full backup, and then restore the last differential backup. Finally, the full backup plus the differential represents the current contents of your hard disk. If you were to restore a series of incremental backups, any files that you threw away after the backup would also be restored.

Problems

Although both programs are excellent, neither is perfect. Fastback II, at least with my equipment, is painfully slow when backing up large volumes to tape. I have a 102MB CMS Enhancements hard disk with 66MB of information on it—Fastback took 86 minutes to perform a standard backup without compression or error checking. Retrospect backed up the same volume in 45 minutes.

Retrospect completed the backup and then ran out of memory while trying to create the backup catalog file. After I removed some INITs and rebooted, the program was able to reconstruct the catalog. Still, the tail end of a backup is not where I want or expect to find serious error messages. Also, when dialog boxes are closed, some areas of the screen are slow to update. Although annoying, it has no effect on performance.

Recommendations

The program that's best for you will depend largely on two factors: the amount of data you need to back up and your hardware configuration. If your backup needs are fairly prosaic and you have 30MB or less on your hard disk, either program may be overkill, particularly given their cost. You can probably do as well with any of the dozen or so less expensive and less feature-laden programs.

If you use floppies exclusively or are swayed by simplicity, Fastback might be the better choice for you. Although Retrospect appears more flexible (particularly in file-selection criteria), it's possible to get lost among the options. For routine backups, Fastback's dialog and menu choices are easier.

For standard tape backups (no compression, no encryption) Retrospect is almost twice as fast as Fastback II. If you want to move into the realm of archiving, Retrospect offers more options and features. And if data security is an issue, only Retrospect offers password-protection and encryption.—*Steven Schwartz*

See* Where to Buy *or circle 749 (Fastback II) or 830 (Retrospect) on reader service card.

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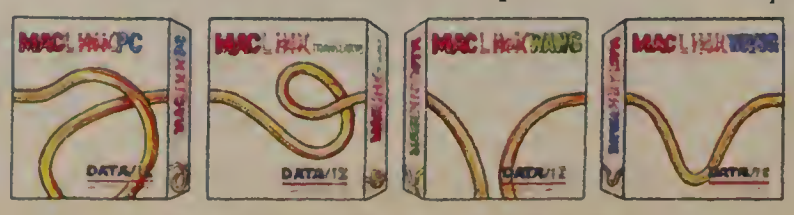
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THE ELECTRONIC WHOLE EARTH CATALOG

CD ROM Whole Earth Catalog

Pros: *Easy to navigate; handy search and find capabilities; pleasing graphic interface; extensive sound samples.* ***Cons:*** *Only as fast as a CD ROM drive, unless you transfer the stacks to a 450MB or larger storage device.* ***Company:*** *Brøderbund Software.* ***Requires:*** *Mac Plus; AppleCD SC or compatible CD ROM drive.* ***List price:*** *$149.95.*

The Whole Earth Catalog, the folio-size paperback with a distinctive black cover, first appeared in 1968. A comprehensive clearinghouse, the catalog provided reviews and contact information for thousands of practical tools, services, periodicals, and books. By the early 1980s, *The Whole Earth Catalog* had grown to a ponderous 5½ pounds.

Its newest incarnation, the Electronic Whole Earth Catalog (EWEC), published by Brøderbund Software, weighs in at less than an ounce. HyperCard-based and containing multimedia information on nearly 3500 products, this year's catalog would have filled more than five hundred 800K floppies, but it actually arrives on a state-of-the-art CD ROM (compact disk read-only memory).

Why a CD?

The obvious question, when handed a thin, shiny disk rather than an oversize book, is whether there is any advantage in the new format? You can't thumb through a CD while lolling in a hammock, and you can't loan it to friends unless they have a CD ROM drive connected to a Mac.

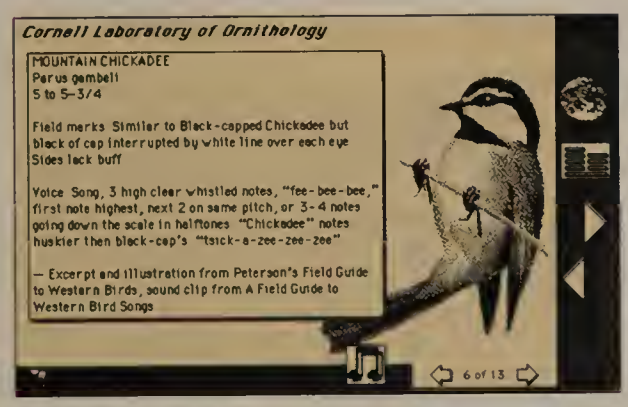
But there are advantages. If you'd like to know whether Zulu history and music are mentioned in the catalog, for instance, the Quick Search feature will find the appropriate index listing along with a count of the number of times the word *Zulu* appears in the catalog; it will also enable you to access those entries. Although the print version of the catalog contains cross-references, finding entries by topic is a tedious, hit-or-miss process.

Second, EWEC not only reviews hundreds of recordings; it provides samples of many on the disk. Of the 420MB stored on the EWEC CD ROM, 360MB are sound files placed in the stacks using Farallon's MacRecorder. Among the more than 500 sounds are Jack Nicholson and Bobby McFerrin narrating Kipling's *The Elephant's Child*, the mating sounds of frogs, authentic Pygmy marriage songs, and entire choruses of gospel tunes. This reminds me of the 1950s when consumers donned headphones in tiny sound rooms at the local record store to listen to records before buying them—truly a civilized practice.

Sure-Fire Navigation

The most noteworthy virtue of the EWEC lies in its ease-of-use. To find a specific entry, simply choose the Quick Search option from the screen menu; to browse, click one of the 13 Domain buttons on the Table of Contents card. Each Domain card contains a number of Section buttons and Sections are further broken down into Clusters, each of which contains reviews, articles, and contact information for each product. In addition, a Cross References box appears at the bottom of each Cluster card. Click on any of the references to go directly to that topic.

To get back to the Table of Contents card, click the Whole Earth button to the right of each screen. Below it are a card button that takes you to the next highest



Birds of a Feather

As indicated by the numbers between the page-turner arrows in the lower right-hand corner of the card, this is the 6th of 13 cards describing the Cornell Laboratory of Ornithology. Like many of the cards in the Electronic Whole Earth Catalog, it has a button with musical notes on it signifying that the card has a sound associated with it. Navigational buttons reside on the right and the pull-down menu is at the top.



level in the catalog hierarchy, and forward and reverse buttons (see "Birds of a Feather"). Section and Cluster cards feature pull-down menus that let you navigate your way back through the levels to the Table of Contents, or you can access the Help cards, the Domain Content cards, or an alphabetical index of the entire disk. From the menu you can also print the current article or an order form, enter the Quick Search mode, or quit.

A Minor Gripe and Major Kudos

My one complaint with the electronic catalog is more a function of the technology than of its implementation. If you can't download the catalog to a mass storage device with a capacity of more than 450MB you are at the mercy of the CD ROM's slow pace. It's not noticeable when moving between adjacent cards, but switching between stacks can be tedious. (The 13 Domains, the Index, and the Order Forms are linked stacks.)

Still, the EWEC is a delightful example of appropriate, well-designed hypermedia. Credit for the catalog's logical and elegant structure must be shared by the Point Foundation (the Whole Earth editors) for their graphic interface and fine editing, and Brøderbund for effective programming. Apple, too, must be commended for recognizing, even before the initial release of HyperCard, that *The Whole Earth Catalog,* with its well-integrated modularity and potential for sound, would serve as an ideal model for commercial HyperCard and CD ROM applications. The realization of this project bodes well for the future of hypermedia.—*Suzanne Stefanac*

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MACRECORDER 2.0

Sound Digitizer with Editing Software

Pros: *New software reduces memory and disk requirements for sound and provides superb HyperCard support; excellent manual.*
Cons: *None.* ***Company:*** *Farallon Computing.*
Requires: *For SoundEdit, Mac 512K; for HyperSound, Mac Plus. Mac Plus and hard disk recommended.* ***List price:*** *$249.*



Don't you love it when a good thing becomes even better? MacRecorder 2.0 is just as easy to use as its predecessor but provides significant new software features that reduce the storage requirements for digital sound and make it easy to add recording and playback capabilities to your own HyperCard stacks. (For background on digital sound and its applications, see "Getting Started with Digital Sound," *Macworld*, November 1989.)

Four Easy Pieces

The new MacRecorder's hardware remains the same as before. A 2½-by-4½-by-1¼-inch box, which connects to the modem or printer port, contains the sound-digitizing circuitry (technically, an analog-to-digital converter) and sports a built-in microphone as well as jacks for an external microphone or stereo, television, VCR, or tape deck. The built-in microphone is convenient, but its sound quality is only slightly better than a telephone's.

The real news in MacRecorder 2.0 is its greatly enhanced software, SoundEdit. With it, you can record, alter, and play back sounds. You can cut and paste portions of a sound using Edit menu commands, and you can process sounds using a variety of digital effects. SoundEdit 2.0 provides the same effects as version 1.0, but adds four types of reverberation that let you simulate being in an large, empty room; in a concert hall; in a stadium; or in outer space.

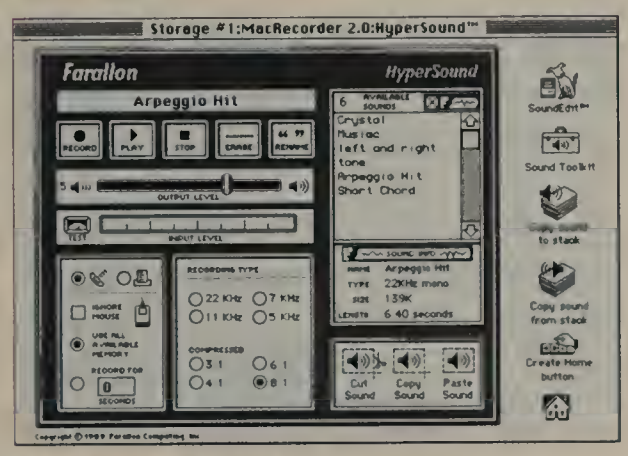
Another remarkable new Tempo command lets you change a sound's playback speed without altering its pitch. You can play back twice as fast (great for simulating an auctioneer or that fast-talking Federal Express customer) or twice as slow (handy for simulating the dying HAL 9000 computer from *2001: A Space Odyssey*).

SoundEdit 2.0 adds two new features for visually analyzing the frequency components of a recorded sound. The sonogram display lets you get an overall picture of a sound's characteristics by displaying a graph that uses gray shades or color to depict the relative strengths of the frequencies in a sound. The spectrogram display performs a similar task, but is better suited to analyzing small portions of a sound.

Perhaps the most exciting new SoundEdit feature is its ability to compress recordings so that they require less memory and disk space—two precious commodities in the world of digital sound. SoundEdit supports four compression ratios: 3 to 1, 4 to 1, 6 to 1, and 8 to 1. With the 8-to-1 ratio, a 2-megabyte Mac can record roughly 8 minutes of audio; such a recording requires about 1.3MB of disk space. By contrast, when you record with no compression and use the MacRecorder's fastest sampling rate, the same Mac can record only about 60 seconds, and that recording will require the same 1.3MB of disk space.

Alas, the higher the compression ratio, the lower the sound quality. Sounds recorded at the 8-to-1 compression ratio seem muffled. When fidelity counts, you'll want to use lower compression ratios (or no compression at all).

Like its earlier incarnation, SoundEdit 2.0 lets you save sounds in its own file format, as SND resources (the format you need to use sounds as system beeps or play them from HyperCard or MacroMind Director), and as instruments for programs such as Broderbund's Jam Session. SoundEdit 2.0 also adds support for the Audio Interchange File Format (AIFF), used by professional sound-editing programs such as Blank Software's Alchemy and Digidesign's Sound Designer II.



All-New HyperSound
MacRecorder 2.0's HyperSound can record and play back sounds in compressed form to save memory and disk space. Other new features let you copy sounds from other stacks, rename sounds, and adjust the playback level using a Control Panel–like volume slider.

Stacks of New Features

The original MacRecorder included a HyperCard stack called HyperSound, which lets you record sounds within HyperCard and then add them to your own stacks. MacRecorder 2.0 includes an all-new HyperSound that lets you record sounds in compressed form and also provides new buttons that make it easier to copy sounds between stacks (see "All-New HyperSound").

For stackware authors, the most exciting feature in MacRecorder 2.0 is the HyperSound Toolkit, a collection of external commands (XCMDs) and external functions (XFCNs) that let you easily add sound-recording and playback features to any stack. The HyperSound Toolkit includes XCMDs that let you play sounds recorded in compressed form (something HyperCard can't do on its own) as well as copy, duplicate, erase, rename, and paste sounds. There are also XFCNs for recording sounds, for listing the sounds in a stack, and for determining a sound's length and memory requirements. There's even an XFCN for creating an on-screen volume meter that lets you adjust MacRecorder's recording volume for best results.

The HyperSound Toolkit stack is blissfully easy to use. You can try any XCMD or XFCN to see how it works, and you can copy any XCMD or XFCN to a stack in a flash. There's no need to grapple with ResEdit or other hard-to-use resource-installation utilities. Online help screens describe the syntax and arguments required by each XCMD and XFCN; they're also summarized in MacRecorder's attractive, clearly written manual.

Farallon requires no licensing or royalty fees for XCMDs or XFCNs. You can sell or give away stacks containing them,

(continues)

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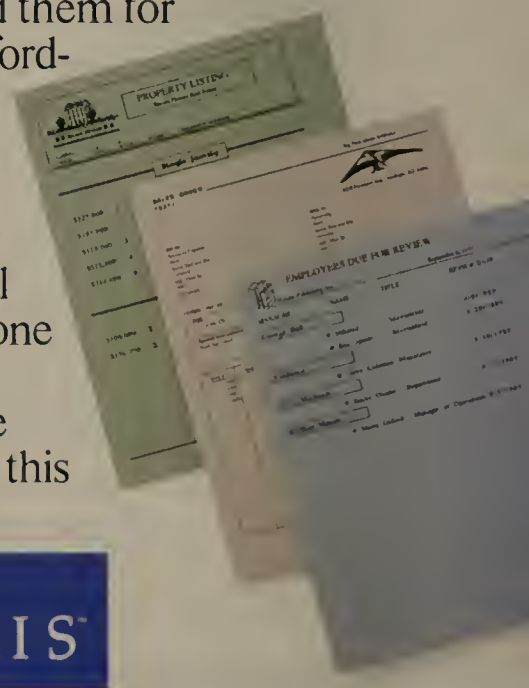
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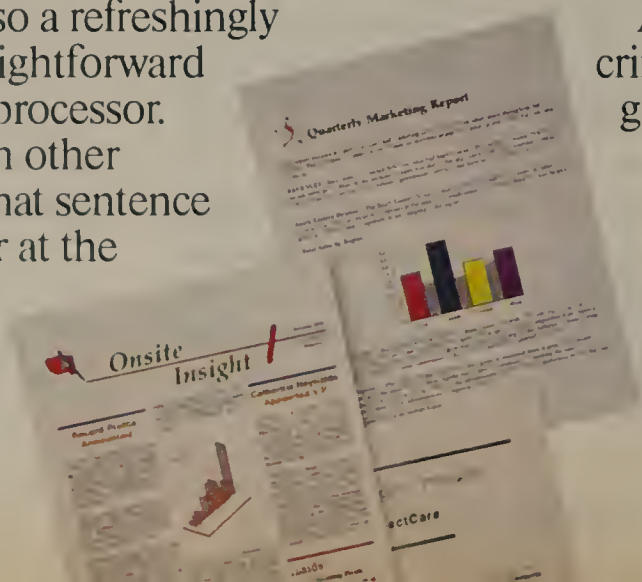
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provided you include an appropriate copyright message somewhere within the stacks.

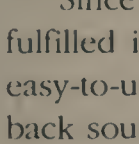
Since the beginning, MacRecorder has fulfilled its mission of being a low-cost, easy-to-use tool for recording and playing back sound with surprisingly good fidelity. MacRecorder 2.0 costs $50 more than its predecessor, but the enhanced SoundEdit and HyperSound software are well worth it. There isn't a better way to economically add the dimension of sound to the Mac.—*Jim Heid*

See Where to Buy or circle 785 on reader service card.

KODAK DATASHOW 480 PROJECTION PAD

LCD Overhead Projection Device

Pros: *Automatically adjusts to signals of 14 different computers, including complete Macintosh line; gray-scale images stay clear and readable, even on hot projectors.* ***Cons:*** *Lower contrast than Kodak's Datashow HR/M; larger and heavier than HR/M; adjusting controls can be confusing for occasional users.* ***Company:*** *Eastman Kodak.* ***Requires:*** *Mac II; standard overhead projector. Compact Macs require custom video port (available from Kodak).* ***List price:*** *$1895; interface cable $120.*



The Kodak Datashow HR/M Projection Pad, introduced in 1988, set a standard against which to measure large-screen Macintosh projection devices. Compared to the typical pea-green LCD (liquid crystal display) projections of the time, Kodak's high-contrast black-on-white display was easier on the eyes—and more Mac-like.

Even today, with many more high-quality LCD projection pads on the market, the Datashow HR/M is an excellent choice for projecting Mac Plus, SE, or SE/30 screens on boardroom or classroom walls. Now Kodak's added the Datashow 480 projection pad for projecting from the rest of the Mac line too.

Beyond the Compact Mac

The Datashow 480 is compatible with signals from the complete Macintosh family of computers, and with signals from video graphic adapters and enhanced graphic adapters in IBM-compatible computers. I've used projection pads that work with various computers before, but not without a great deal of frustration. I usually find myself having to repeatedly fiddle with the controls during presentations in order to keep a satisfactory image on the wall.

With the 480, Kodak seems to have overcome most of the problems associated with the one-size-fits-all projection pads. Kodak has built some intelligent circuitry into the pad that allows it to automatically recognize and lock onto the incoming video signal, and adjust display controls accordingly. The pad's microprocessors recognize 14 standard signals, including Macintosh, Apple, IBM, AT&T, Olivetti, and NEC signals. In addition to the 14 preset signals, the Datashow 480 can store 3 computer signals selected and programmed by the user. Programming the unit with its 8 on-board buttons isn't difficult but does require the manual. Once these programmed settings are stored, they're automatically recalled when the unit is reattached to the computer you've configured it for.

Screen Tests

When I tried the Datashow 480 with a Mac SE and an SE/30 (the 480 plugs in to the same add-in port that I use with the HR/M Datashow), the 480 displayed the 512-by-342-pixel image in the center of its 740-by-480 panel. Making no adjustments except for contrast, I was able to project a good image, although not quite as good as those projected by the HR/M. In order to accommodate the larger screen, it seems, Kodak had to reduce the contrast ratio from the impressive 20-to-1 of the HR/M to 15-to-1.

When used with a Mac II, the 480 displays up to 8 shades of gray; colors are mapped onto those 8 shades. Although the standard mapping works well most of the time, it can't produce an optimal display in every case; quality has to be compromised when 256 colors are mapped onto 8 shades of gray. Kodak has built in several alternative color mappings for situations where the standard won't do. Even so, I sometimes had to try many combinations of contrast and palette before I found



MARK JOHANN

The Kodak Datashow 480 Projection Pad

one that produced a clear, flicker-free display. And even then, some of the color-mapping choices were less than ideal.

The Datashow 480's added circuitry and controls make the unit relatively large (14 by 14 by 2.75 inches) and heavy (7.1 pounds, plus 2 pounds for the power transformer). Normally that's just an inconvenience, but this added bulk can, with some projectors, stand in the way of a flawless presentation. For example, when I tried to use the 480 with an older 3M projector with a sharply-angled upright-mirror stand, I couldn't place the unit squarely over the projector lens because of its bulk, making it impossible to display the bottom of the Mac II screen.

Ironically, that same old projector pointed out a strength of the 480. I've yet to find an LCD pad that could survive a long, slow cooking on that 625-watt beast without distorting the displayed image. Even my faithful Datashow HR/M shows phantom horizontal and vertical lines after a couple of hours on the heat. In contrast, the Datashow 480, with two built-in cooling fans, survived six hours on the old 3M with no noticeable aberrations.

Projecting a Winner

Kodak has another clear winner here, but it's not for everybody. If all of your presentations are done with a Plus, SE, or SE/30, you're better off with the low-cost simplicity of the high-contrast Datashow HR/M. But if your needs go beyond projecting from a compact Mac, the Datashow 480 deserves a good, hard look.

—*George Beekman*

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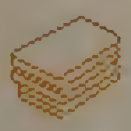
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Circle 303 on reader service card

HYPERCOMPOSER 1.0

HyperCard Music Composition Software

Pros: *Simplifies HyperCord's cumbersome music-entry system; exponds HyperCord's limited note copocity; eosy export/import of music ond sounds.* ***Cons:*** *Sluggish response; no disploy of key or time signotures or bor lines.* ***Company:*** *Addison-Wesley Publishing.* ***Requires:*** *Moc Plus. Hord disk recommended. System 4.2 ond Finder 5.3 required (not compotible with loter versions); HyperCord 1.2.1* ***List price:*** *$69.95.*



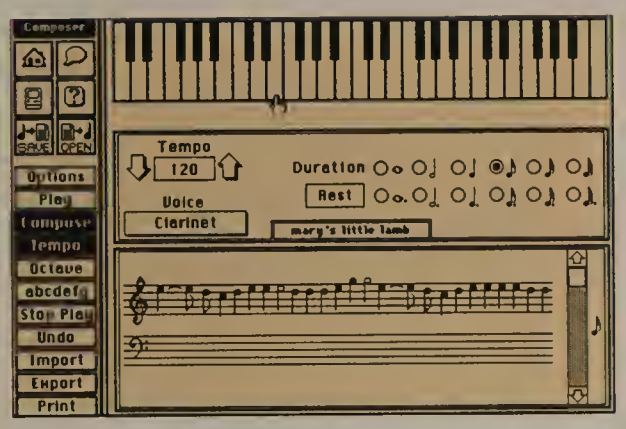
Bill Atkinson and the HyperCard team richly deserve credit for a whole slew of program design and user interface innovations, but they dropped the ball when it came to music. Fortunately, HyperComposer should help remedy any frustration with HyperCard's primitive music-entry system and limited note capacity. But while HyperComposer streamlines stack music-making considerably, it misses many opportunities to further unfetter your muse.

The biggest obstacle to making music in HyperCard is that you can only add music to a stack by scripting the notes with HyperTalk. Here's an example of the cumbersome, if reasonably straightforward, alphanumeric codes required, **Play "clarinet" tempo 120 e4q. d4e c4q d4q e4q e4q e4h** (did you recognize the first two measures of "Mary Had a Little Lamb"?) Sure, it doesn't take long to grasp that each three-to-five character sequence after the first four commands specifies a note, in terms of pitch, octave, and rhythmic duration. But HyperTalk is much less efficient than conventional notation, and if you already know it, it's silly to learn another nonstandard method.

HyperTalk Translations

HyperComposer to the rescue. To enter notes, you pick them out on your choice of a musical grand staff (treble and bass clefs) or a screen representation of a piano keyboard. The process couldn't be easier, and since HyperComposer translates your selections into HyperTalk for you, syntax or "spelling" errors are impossible. On the other hand, you have to click on note duration first, then the note you want; and since HyperComposer responds sluggishly, entering notes with the mouse actually takes quite a bit longer than typing in the corresponding HyperTalk codes—assuming you're fluent in musical HyperTalk.

As you select notes, they appear in a separate editing window either in HyperTalk character codes or on a crude musical score—again, your preference determines which display you see. You can edit notes in either style with standard cut-copy-paste maneuvers. Oddly enough, though, there aren't any cut, copy, or paste buttons on the screen—HyperComposer makes you perform all three edit functions from the Macintosh keyboard, a burdensome requirement since the program relies on the mouse for every other function except naming files. And you can't change a note's pitch or duration once you've



HyperComposing
The main HyperComposer screen, showing the piano keyboard for selecting note pitches at the top.

placed it in your song. Instead, you must first delete it altogether and then insert a new note.

In the case of the HyperTalk display, you can actually type in new note entries from the Mac keyboard if you like; used in this way, the only difference between HyperComposer's HyperTalk editor and the HyperCard message window is that you don't have to enter the play, voice, and tempo commands before the melody. As to HyperComposer's musical score editor, the window itself has room to display only two staves at a time and can't be enlarged. Another equally irksome limitation is that you see treble and bass staves and your notes, but nothing more—no beams, no key and time signatures, not even measure lines. With nothing to orient you, reading through a long song to find a specific passage you want to edit is akin to trying to find a needle in a haystack.

Longer Songs, Different Voices

HyperComposer's next most important benefit is that it permits much longer songs than does HyperCard. Unaided, HyperCard can play only 256 notes per button, but HyperComposer expands that limit to a daunting 11,000 notes. What's more, you can play the song using any of the 30-odd sounds that come with HyperComposer, or with imported 'snd ' resource voices created by programs such as SoundEdit. (With HyperComposer, importing a sound is a simple procedure that works flawlessly.) However, another HyperComposer shortcoming crops up in the playback department—play always starts from the beginning of a song.

Once you're happy with a composition, you can export it to any HyperCard stack with the click of a button and a waltz through a few dialog boxes; HyperComposer automatically creates a new button for the song in the destination stack. Within HyperCard, of course, you can extract the script HyperComposer creates and add it to other buttons. Although you can't change sounds during playback within HyperComposer, the program does let you export selected notes after reassigning a new sound, so you can put together HyperCard songs using multiple sounds through a little export ingenuity and script editing. The export feature lets you export sounds as well as songs to your stacks. This feature comes in handy if the target stack doesn't already have the sound specified in your song.

The ideal amateur composer's stack would let you synthesize and digitize your own new voices, and it might even trick HyperCard into playing polyphonically (more than one note at a time). HyperComposer doesn't cherish such lofty ambitions, but in its modest self-defined role it still begs for some important improvements. Even in this first uneven release, however, HyperComposer is a major musical advance over HyperCard alone.—*Steve Cummings*

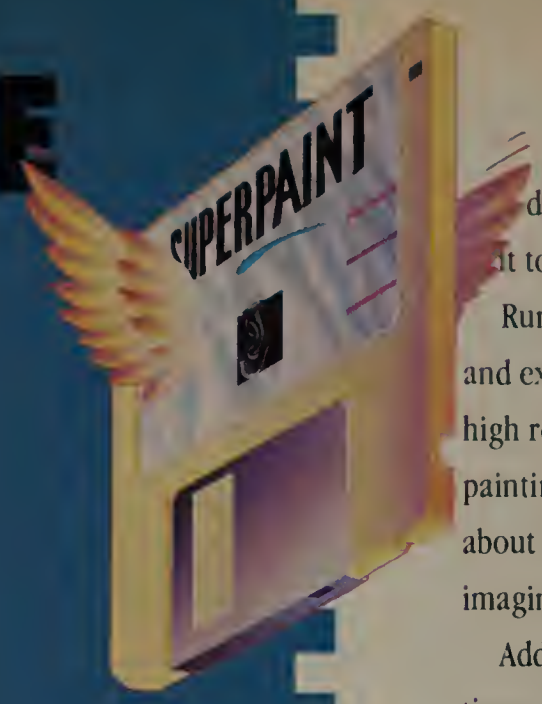
See Where to Buy for contact information.

THEIRS MAY BE SUPER. BUT NOW IT'S YESTERDAY'S NEWS.

Evolution's never much fun for the newly extinct. But it sure gives the rest of us better answers to our needs. In this case, a next-generation entry level graphics program that doesn't limit its users to entry level performance. Or entry level results. Or an entry level future.



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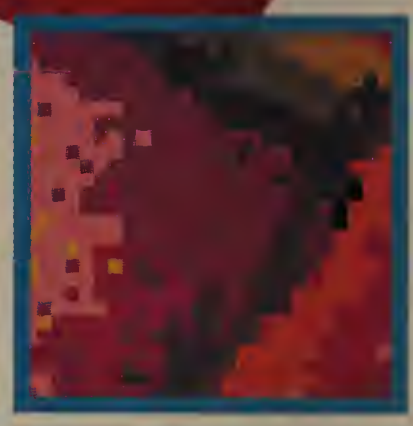


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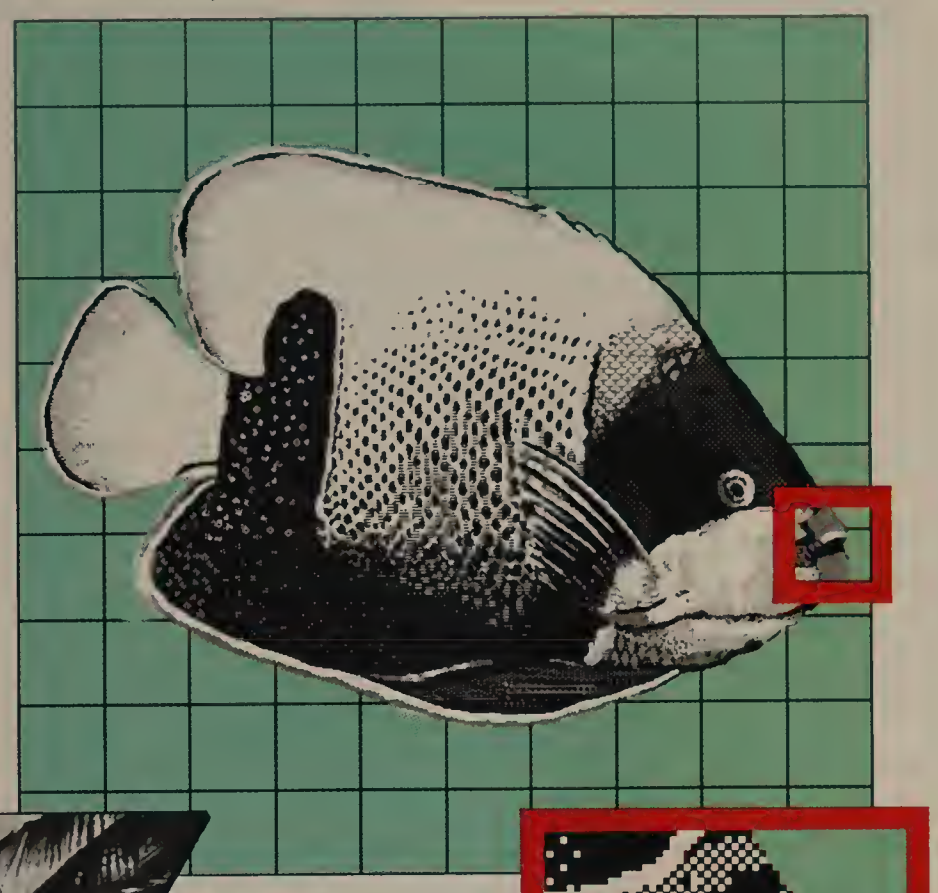
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HEWLETT-PACKARD DESKWRITER

Ink-Jet Printer

Pros: *Fast; clear output; superior envelope handling; easy installation.* ***Cons:*** *Jaggier output than on laser printer.* ***Company:*** *Hewlett-Packard.* ***Requires:*** *Mac Plus.* ***List price:*** *$1195.*

At last, there's a non-Apple printer that can be used with a Mac without the need for awkward caveats or engineering expertise. The Hewlett-Packard DeskWriter is as easy to install and use as an ImageWriter, has a better manual, and offers significantly better output besides.

True, the output is not quite as good as that of a LaserWriter. Somehow, 300 dots of ink seem not to be equivalent to 300 dots of laser-primed black dust. Graphics, however, are dazzlingly clear, and the DeskWriter produces a perfectly inky midnight black; with a judicious choice of fonts and sizes you can get very near laser quality.

Light and Bright

The DeskWriter is amazingly light—about what you might expect the weight of an elaborate paper tray to be—because the power supply has been placed in a brick-size transformer block on the power cord itself. This means that the same printer can be shipped internationally, with only a change of power cord, and all that weight and structural bracing can be left out of the printer housing.



MARK JOHANN

The Hewlett-Packard DeskWriter

The DeskWriter has the most unobtrusive non-Apple printer installation yet devised, simpler even than the third-party software-and-cable packages for using a Mac with HP's own DeskJet series. You just connect the standard Apple peripheral cable and the power cord, load paper in the .copier-style tray, drag the DeskWriter icon to the System Folder, and load the set of HP-supplied fonts. Even better, the DeskWriter's manual affords a rare glimpse at documentation that's been done right.

Your Type?

The DeskWriter software package includes four optimized business-correspondence fonts: Times, Symbol, Triumvirate (a Helvetica substitute), and Courier. If you select Font Substitution in the Page Setup dialog box, you get exactly what you see on the screen on your printed page. No special arrangements need be made for other old favorites like Chicago or Monaco—to make these scale properly, however, you should install the desired size and one that's four times larger (the software uses this information to adjust screen output of 72 dots per inch to the printer's 300 dpi, approximately 4 by 72, capacity). Since the DeskWriter is not a PostScript device, the printed output is slightly jaggier than LaserWriter output, but it's not much jaggier, and output from HP's optimized font set looks quite good (see "Renaissance Printer"). They also print faster than non-HP fonts when the printer is used on an SE (it takes roughly a minute to organize and print a full page of Venice, compared to 40 seconds for CS Times), but on an 030 machine these differences are really negligible.

An additional set of seven font families is available in the HP DeskWriter Font collection for $395.

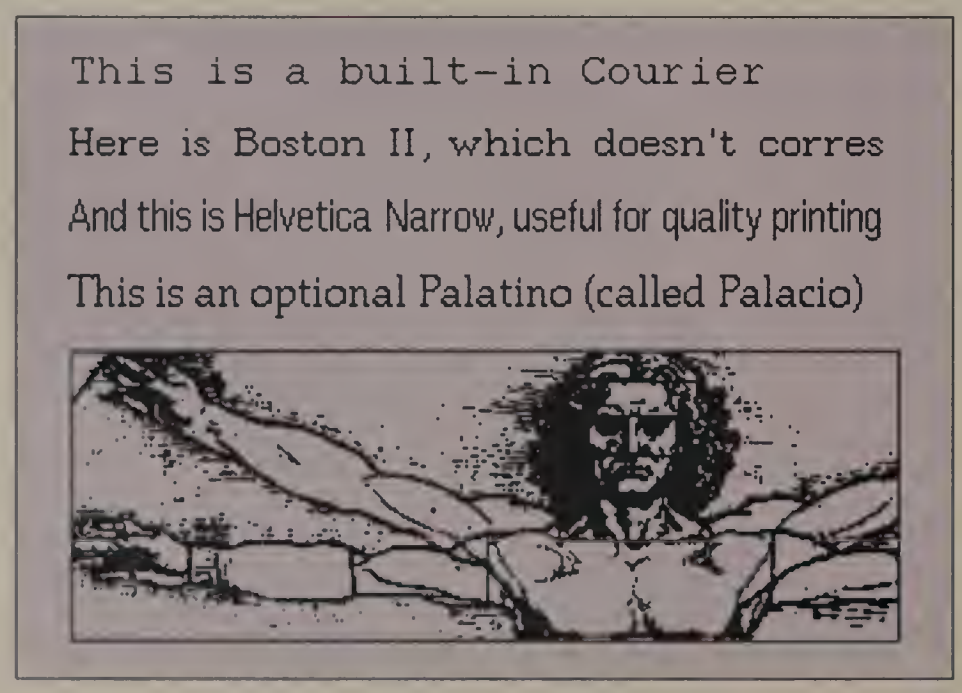
Ink on Paper

When printing graphics with lots of solid black space, you should wait a minute or so before handling the paper, since the ink you're working with is wet. This, however, is not a problem with text. The ink-jet process also puts a premium on paper quality—good copier bond is recommended. Paper with pronounced fiber directionality can result in print that looks fine at first but grows fuzzier in time. Bulk low-quality paper of the kind often used for draft copies on a dot matrix printer gives even fuzzier results.

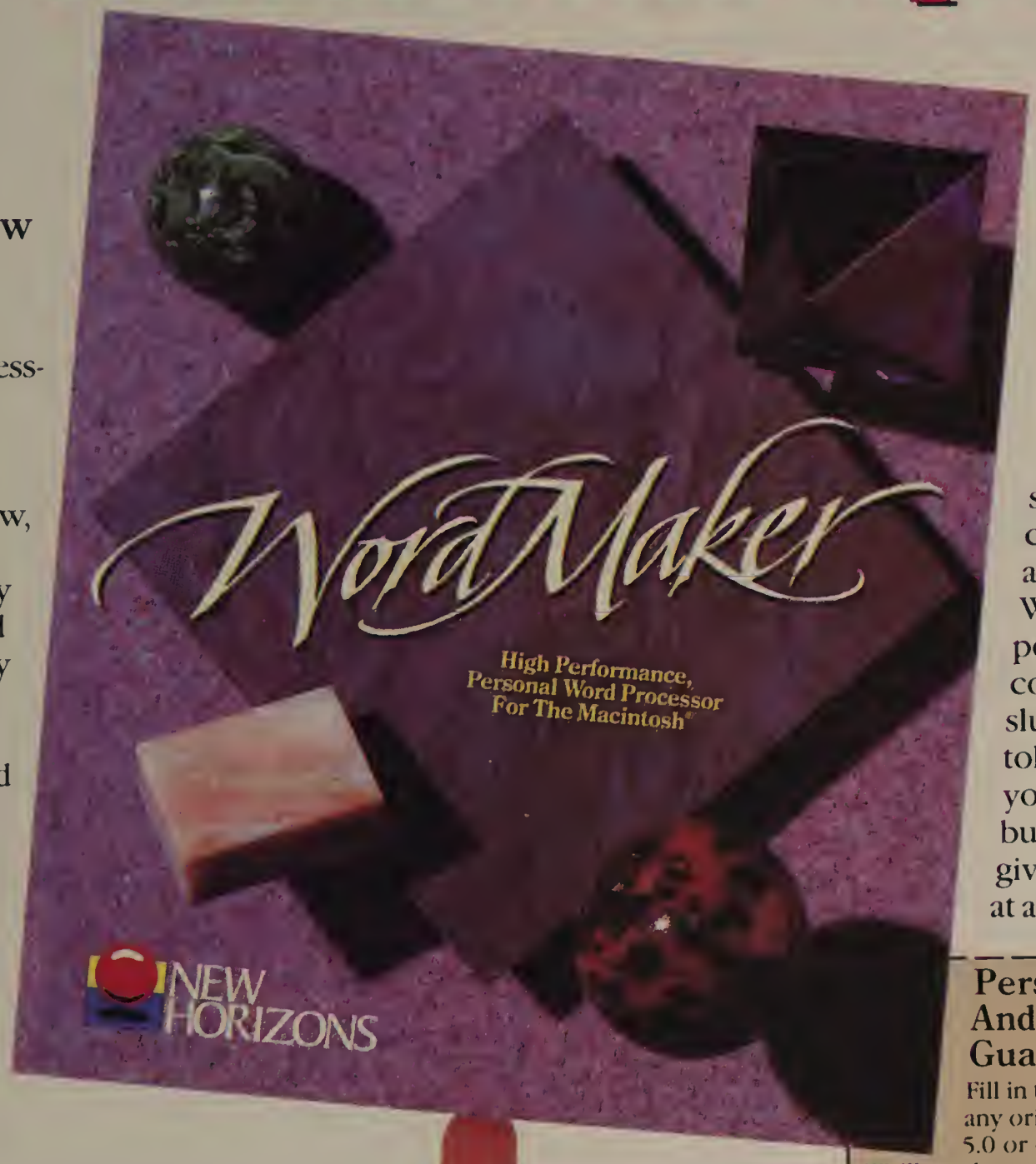
You may as well use good paper, though, because the DeskWriter is really designed for light-duty personal use, at about 20 output pages a day. At that rate, paper is not going to be your largest expense (ink cartridges cost $18.95 and are good for only 400 pages). Considering the impressive print quality you get with good paper, I think it's worth it. For correspondence, this printer has another striking virtue—envelope handling is simple and foolproof, using a slick special envelope guide to steer the envelope accurately through the paper path.

(continues)

Renaissance Printer
Here are a few examples of DeskWriter text and graphics.



The Perfect Balance Of Power And Speed.



WordMaker™: A New Direction In Word Processing

Macintosh® word processing seems to mean giant features, giant memory requirements, giant complexity. These clumsy, slow, over-featured word processors that hog memory miss the point. You need to get things done quickly and efficiently. And desk accessories don't quite cut it. Whatever happened to simple elegance?

Introducing WordMaker from New Horizons Software, the first *personal* word processor for the Macintosh. WordMaker has the perfect balance of power and speed.

Power, Speed, And Compatibility

WordMaker has the power you need to produce documents quickly and easily. It has important features like paragraph-based formatting, spell checking, mail merge, and odd and even page headers and footers. And its unique method of handling graphics lets you position them anywhere on the page and even wrap text around them. There are also elegant niceties like document templates, automatic or fixed line height, sorting, and capitalization changes.

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WordMaker adds a personal touch to word processing. Its intuitive design and logical layout will make WordMaker your personal performer. No obscure commands to learn and no sluggish performance to tolerate. It's designed for your personal use every business day. WordMaker gives you perfect balance at a personal price: $124.95.

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Fill in this coupon. Send it to us with any original MacWrite disk (version 5.0 or earlier) and a check for $40. We'll send you WordMaker. Use it for 30 days. If you are not convinced that it performs better than MacWrite we'll return your MacWrite disk and your $40 with no questions asked.

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No Extra Effort

Most low-to-medium-cost ways to use non-Apple printers with a Macintosh are rarely worth the extra interfacing effort and need for workarounds on common document types (see "Printer Tools," *Macworld*, November 1988). The DeskWriter, however, requires no extra effort, prints any standard document beautifully, and costs a little less than a high-quality dot matrix printer—thousands less than a LaserWriter. This product is a true breakthrough.—*Charles Seiter*

See Where to Buy or circle 765 on reader service card.

ATONCE 1.0

Small Business Accounting

Pros: *Easy to learn and use.*
Cons: *User must purchase annual Payroll tax table updates from Layered.* ***Requires:*** *Mac Plus; hard disk.* ***Company:*** *Layered.*
List price: *Introductory $395.*

With the release of atOnce, Layered once again sets the standard, this time for low-priced general accounting programs. The program is loaded with features (some of which are not even found in high-end products), is highly sophisticated, and best of all, is easy to both learn and use.

AtOnce competes to a limited extent with one-write programs, such as Great Plains' Plains & Simple One-Write, Layered's Insight OneWrite, and the very simple, straightforward MultiLedger program by CheckMark. But atOnce's main competitors are Computer Associates International's Accpac Bedford Simply Accounting, Chang Labs' Rags to Riches, and Monogram's Business Sense.

AtOnce Features

AtOnce doesn't import or export data; nor does it offer concurrent multiuser capability, since it's not made up of separate modules. What you do get is General Ledger, Accounts Receivable, Accounts Payable, and Payroll functions in one integrated program. AtOnce allows for 99 departments and 99 divisions (or profit centers), a flexible 12- or 13-period fiscal calendar, autoreversals, recurring transactions, budgeting, up to 20 user-created General Ledger (G/L) journals, customized reports, up to 20 checkbook accounts, automatic calculation of Accounts Receivable (A/R) and Accounts Payable (A/P) discounts, automatic sales tax calculation, recurring invoices, flexible payroll processing, a liberal number of pay and deduction categories, automatic calculation of taxes, all the reports needed for payroll taxes, multilevel passwords, an automatic decimal option (if you want to enter 137.45, you just type the numbers, 13745, and the program supplies the decimal), context-sensitive help screens, imported graphics for checks and reports, and color screens.

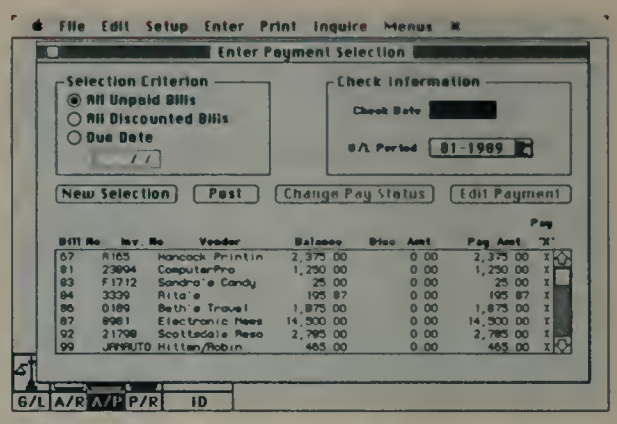
In addition, the program offers three options for reports: view on screen, print, or add to a queue that can be batch printed in the background.

The Payroll segment doesn't offer data entry for hours on a single screen, as MultiLedger's Payroll does. So, for example, if you have a retail store with lots of employees working different hours each pay period, you'll probably prefer MultiLedger's entry scheme. But atOnce does almost as well by letting you review, in Manual mode, each employee's pay record before it processes the payroll, allowing you to edit any entries at that time. If you don't want to review every employee before generating the checks, you can select Automatic processing, which enters payroll information without examining the screen for each active employee.

Using atOnce

The HyperCard tutorial that comes with atOnce is thorough and walks you through the basics of accounting as well as through atOnce itself. The clearly written documentation carefully guides you through every step of setting up and using the program. Data-preparation forms are included in the *Guide to Getting Started* booklet.

When you set up a chart of accounts, you can choose from no less than 13 default sets, ranging from Architects to Travel Agencies. I prefer to use the Quick Start set and modify it to provide the accounts my business needs. You assign a name and ID for your company and begin.



Accounts Payable Bill-Payment Screen
AtOnce allows for flexible bill payment in the A/P ledger: all bills, all discounted bills, or all bills due by a certain date, or by using the Selection Criterion and highlighting individual bills, you can pay bills one at a time.

You control the program from a palette at the bottom-left of the screen, and the top menu selections change according to which icon you choose: G/L, A/R, A/P, or P/R. The company ID also appears to the right of the palette, which helps if you're working with multiple companies.

The A/R customers, A/P vendors, and Payroll employees are assigned alphanumeric IDs and are listed in a pop-up window. As an added convenience, atOnce lets you view the lists in either number or name order in the window. The Chart of Accounts is numeric, but you can also put it in order by name. If you convert to atOnce in the middle of your fiscal year, the program allows you to input previous accounting information.

AtOnce allows you to keep up to 26 periods open. In addition to closing a period, it also offers the option of locking a period without closing it. For example, in May you could close all the first-quarter months and lock July to December, which would allow you to make entries only for April, May, and June. Or, if you prefer, you could lock just the first-quarter months, and then unlock them if you discover any prior transactions to post. You can, of course, post future transactions by unlocking the appropriate month, making your entries, and then relocking the month to prevent accidental entries from being made. The program works in real time,

(continues)

The software that helps Federal Express® deliver buildings overnight.

Ric Honey, a project manager of new construction for Federal Express, knows a little about deadlines.

"People say to me, 'We need this building next month.' I say, 'But that's a 1-year project.' They say, 'OK, 3 months.'

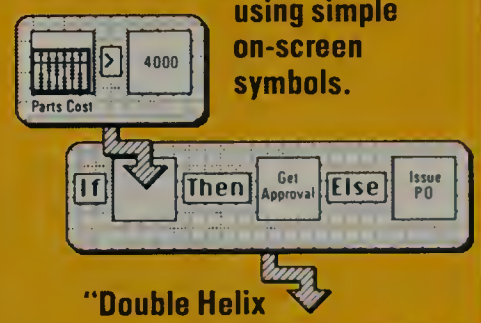
"Managing 4 or 5 projects like that can mean a paper trail of over 600 forms at a time. All with pen and paper. I knew I had to do something."

So Ric looked into a database program for his Macintosh.® "I chose Double Helix® because I didn't want to learn a programming language.

"I had a spreadsheet, and I knew it could do 'macros.' But *I* couldn't. If I could tell it in English what I wanted, fine. But I'm an awful typist. One finger. Try doing macros with that!

"When they told me about Double Helix, I said 'You mean I don't have to read anything? All I do is drag around icons, pictures? This is great!"

Only Double Helix lets you manage information your way, using simple on-screen symbols.



"Double Helix makes sure all the big expenses come up for my approval."

Now Ric and his team run the Double Helix multi-user application he created. He reports it's already cut 25% off his paperwork time.

"I just tell Double Helix what I want. And I get it.

"I wish my whole life was like that!"

For a Double Helix brochure or test flight kit, call Odesta now at **1-800-323-5423**. (In IL, 312-498-5615.) Current users, ask about our special upgrade offer.

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Double Helix.

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which means you post (or save) each transaction immediately rather than batching them in groups for later posting.

Some Minor Cautions

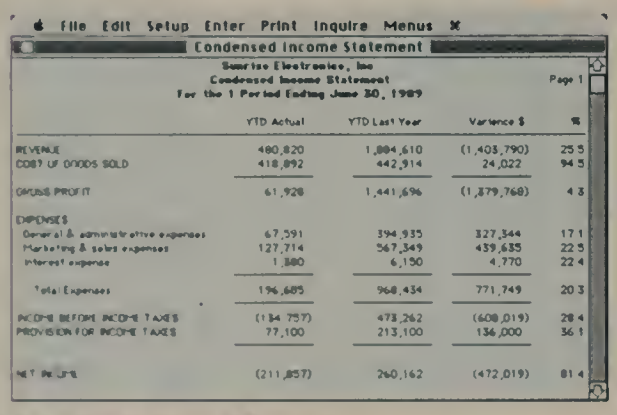
There are a few caveats you should be aware of. First, a hard disk is a must, and you should keep at least 5 megabytes free. Even after I removed the HyperCard tutorial files, the main program, help program, and sample company file alone occupied about 2MB—leaving about 3MB for expansion of company data files. If you have several companies, you'll need even more room.

Another minor problem is that the program allows space for only 7-digit alphanumeric invoice numbers in Accounts Payable. In my experience, 8-digit numbers are not uncommon, and a few vendors insist on assigning invoice numbers that are almost as large as the national debt.

My only major complaint is with Payroll, where Layered forces you to buy its annual tax table updates—at $99 for the federal tables and the first state, plus $25 for each additional state. I would like to see Layered offer users the option of updating the tables themselves, which is not too complicated providing the tables are set up properly.

From my past experience, I am leery of recommending new programs without strong qualification. But based on what I've seen, I would not hesitate to recommend atOnce to my best friend. *—Alan L. Slay*

See Where to Buy or circle 719 on reader service card.



An atOnce Screen Report

AtOnce offers a variety of standard reports, as well as giving you the option of preparing custom reports. You may send the reports to the screen, to the printer, or to a printing queue for later background printing while you are working on something else.

MACLINK PLUS PC 4.0

File Transfer and Translation Program

Pros: *Easy to install and use; good clear documentation; newly added support for several PC graphics file formats.* ***Cons:*** *PC side of the product has a spartan interface.*
Company: *DataViz.* ***Requires:*** *Mac Plus; IBM PC or compatible.* ***List price:*** *$195.*

MacLink has long been a reliable data bridge for moving files between the Mac and IBM worlds. MacLink Plus PC 4.0 reinforces this usefulness by adding support for a number of PC graphics formats, including Lotus 1-2-3 (PIC), PC PaintBrush, and TIFF, plus translators for Microsoft Works and WriteNow.

To get up and running, you connect the PC to your Macintosh printer port or to modems with a cable. An adapter lets you connect to an IBM PC, AT, or PS/2 compatible. Installing the IBM and Mac software is also effortless.

The opening menu has radio buttons: Set Mode, Set Communications, Set Translators, and Select Files. To set up MacLink for the first time, use the Set Communications menu to configure baud rate, parity, remote device (IBM PC, Mac, and so on), and the transfer method you'll be using (cable, modem, PBX, and so on).

There are four MacLink Plus PC operating modes: MacLink mode for transferring and translating files from PC to Mac; Desktop mode for translating on the same Mac from one application to another; Terminal mode, which provides a simple terminal emulation for sessions with another machine (such as a mainframe); and MacLink Answer mode, a direct Mac-to-Mac link for transferring files from one Mac to another.

Crossing the Bridge

Translation is a one-step process that transfers the file and then automatically converts it to the format you've specified. MacLink Plus PC's translators work in conjunction with the Apple File Exchange utility, as well as a long list of file formats.

The Set Translators radio button displays a list of file formats in two side-by-side windows: the From file and the To file. You simply go back to the Set Translators menu to reverse the direction of the file transfer (the default setting is PC to Mac). Once the computers are connected, the files on the IBM drive are displayed. You can easily toggle from drive C to drive D, or from one subdirectory to another (IBM subdirectories are similar to folders on a Macintosh).

On my first try, MacLink Plus PC faultlessly transferred and translated a WordStar document from the PC to Microsoft Word on the Mac. The converted file was a clean conversion of the PC document, which included a number of print commands for boldface and underline as well as several font selections for a LaserJet. There were no extra carriage returns or misplaced tab or paragraph markers in the converted document.

Translation parameters can also be configured and saved to a file. So if you frequently transfer and convert WordStar files from a PC to a Mac, just open a configuration file and you're ready to go. One shortcoming, however, is that you must transfer files individually.

From the PC side the interface is spartan, with only one screen. The top half is reserved for setting connection parameters, and the bottom half contains a few options for sending and receiving files. You cannot select file formats for conversion or otherwise initiate a transfer from the IBM side; instead, the software must be driven from the Mac.

As a general-purpose file transfer and translation product, MacLink Plus PC offers good value for the price. A well-designed Mac interface, good documentation, ease of use, and support for more than 60 file-translation formats make this program a must for anyone contending with dual operating systems. If you already own MacLink Plus and upgrade to MacLink Plus PC, you'll receive the new manual and the capability to transfer and translate some PC graphics files (the upgrade price is $45). In either case, you'd be hard-pressed to find a more mature, polished file translator. *—Ken Smith*

See Where to Buy or circle 781 on reader service card.

RasterOps Monochrome

ClearVue/SE: The only SE big-screen display with an integrated 3x FREE Accelerator.

The most technically advanced monochrome display for the SE gives you a choice of our 19" 1024 x 768 display, or Apple's® 15" Portrait Display. It is the only display board to give your SE the performance boost you need to run big screen applications fast, for maximum productivity.



The ClearVue/SE gives your SE the ability to drive our 19", 1024 x 768 display (shown above, left), or Apple's 15" Portrait Display (shown above, right). Either way, you get the convenience of our Dual Screen Zoom feature that lets you click on any area in your big display and get an instant section on your SE screen (as shown on the 19" system above) or get an instant enlargement on your built-in SE display (as shown on the 15" system above).

16 MHz Accelerator

The ClearVue/SE adds a high speed microprocessor that immediately doubles the performance of your SE from 8 MHz to 16 MHz.

Optimized RAM Interface

Incorporating a tightly designed memory interface to take advantage of our 16MHz CPU, the ClearVue/SE pushes the performance gain beyond 2x. With the vast improvement in our DRAM (Dynamic Random Access Memory) technology, faster DRAM speeds are now available. The ClearVue/SE takes full advantage of the faster DRAMs by reducing the number of CPU wait states for 100ns or faster parts, while still supporting the slower 150ns parts.

Optimized ROM Interface

To take further advantage of the 16MHz CPU, a tightly designed ROM (Read Only Memory) interface was added, which reduces the number of CPU wait states.

Flicker-Free Display

You get Apple's standard 72 dot-per-inch resolution, so your screen display is accurate. This high-speed oscillator gives you a 72Hz refresh rate for a stable, flicker-free image — essential for long, intensive work sessions.

Shadow RAM

In order to draw to the SE's monitor and produce sound, some DRAM must be present on the slow, SE board which can create an access bottleneck. To improve performance, the ClearVue/SE incorporates a shadow copy of the SE board's DRAM in its high speed, optimized DRAM so that writes are executed to both, and reads are executed from the shadow copy. This feature gives you a 50% performance gain in accessing SE board DRAM.

Productivity Software

To keep you as productive as possible, we provide software for 2x, 4x, and 8x zooming, large text presentation mode, and pop-up menus.

Sound Protection

Accelerators can distort the sound functions of SEs as a result of the speed increase. RasterOps provides special sound RAM so you get zero distortion. Your Mac SE sounds and acts completely as it did before, only much faster.

Floating Point Unit

The standard SE forces the slow CPU to do all mathematical calculations. We provide an optional 16MHz 68881 Floating Point Unit to increase mathematical calculation performance as much as 600%.

Integrated Display/Accelerator

RasterOps is the only company integrating display and acceleration circuitry on one board. This gives you several benefits: the speed you need to drive big-display applications like desktop publishing, graphics, or databases; reduced price through elimination of redundant parts and margin that multiple boards require; and a more reliable, cooler, single-board solution.

RasterOps board	RasterOps Monitor 19", 1024 x 768 72 Hz, 72 dpi	Apple Portrait Display 15", 640 x 870 75 Hz, 80 dpi
ClearVue/SE (w/free accelerator)	✖	✖
ClearVue/SE30	✖	✖
ClearVue/ II	✖	

RasterOps has a complete line of Monochrome products to choose from. (When purchased for use with the Apple 15" Portrait Display, only the board is sold. Your participating Apple Dealer supplies the monitor.)

ALL RASTEROPS PRODUCTS COME WITH A FULL 1 YEAR WARRANTY

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Mouse Alternatives

A+ MOUSE ADB

Pros: *Easy to clean; resistant to dirt; precise.* ***Cons:*** *Needs special mouse pad.* ***Company:*** *Mouse Systems.* ***Requires:*** *Mac SE.* ***List price:*** *$129.*

GRAVIS ADB MOUSESTICK

Pros: *A joystick for playing games; very customizable.* ***Cons:*** *Hard to use with programs other than games.* ***Company:*** *Advanced Gravis Computer Technology.* ***Requires:*** *Mac SE.* ***List price:*** *$129.95.*

TURBO MOUSE ADB

Pros: *Doesn't need much desk space.* ***Cons:*** *None.* ***Company:*** *Kensington Microware.* ***Requires:*** *Mac SE.* ***List price:*** *$169.95.*

If there is one aspect of the Macintosh that set it apart from other computers when it was introduced, it was the mouse. So it is not surprising that several companies are now manufacturing different mice to sell to people with different needs for game playing, precision, size, flexibility, or durability. Mouse Systems' A+ Mouse, the Gravis MouseStick, and Kensington's Turbo Mouse are three of these; each offers an alternative approach, and their target markets are as different as the designs of the mice themselves.

A+ Mouse ADB

Anyone who has used the mouse for a long period of time knows how the mechanical parts can be corrupted by dirt and grime. The ball starts to stick more than roll, and the mouse loses its precision. The A+Mouse ADB solves this problem. The mouse sits on a special plastic pad; the mouse is easy to move because it has no rolling ball to produce friction. A tiny light shines inside the mouse, and a photodetector measures the amount of light reflected off the pad. A gridlike pattern printed on the surface of the pad reflects light differently in different places, and the mouse can measure the change in position from the change in reflectivity. The mouse is quite sensitive and the pad is more than big enough. I used the mouse with a large monitor and rarely moved the mouse off the pad's edge.

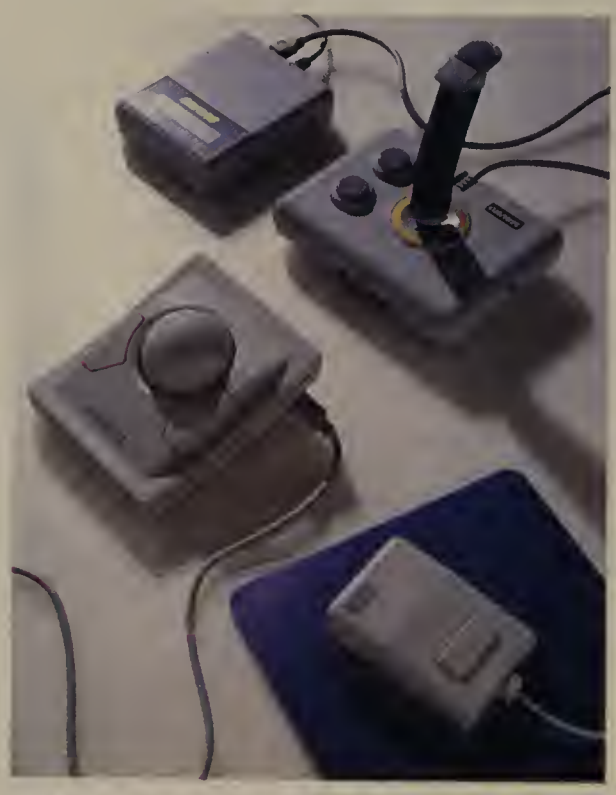
The A+ Mouse is the same length as the standard Apple mouse (3 3/4 inches) and slightly wider (2 1/2 inches versus 2 1/4 inches). It is significantly lighter because it contains no mechanical parts. Although its shape is not too different, its touch is much lighter, so I began handling the mouse with more graceful and precise movements.

Gravis ADB MouseStick

When it comes to games, most people are content to live with a mouse and let it simulate whatever controls they need. Some players, however, demand more control over the action; that's one reason why Advanced Gravis is selling its joystick for the Mac and calling it a MouseStick.

The stick's shape felt comfortable in my hand; the stick is coated with a soft black plastic padding. Its tension is adjustable, and the construction is solid enough to withstand exciting, white-knuckle battles. On the other hand, I tried using a MouseStick with my word processing and drawing applications but felt like a kindergartner with all four fingers wrapped around the pen.

The ADB MouseStick comes with two units connected by cables. The first holds the joystick and the buttons, and the second holds a processing unit that interprets signals and converts them into commands the Mac can interpret. The system accepts much more than left and right movements, and the MouseStick takes full advantage of this. The MouseStick's CDEV controlling software is probably the most customizable piece of software I've ever seen. You can adjust practically everything about the MouseStick. The functions of the buttons on top of the stick and on the sides can be changed by resetting the CDEV software. Sensitivity to touch and the speed of the pointer's movements are also adjustable. You can also configure axes' scales and interchange *x* and *y* axes. These parameter settings can be saved to disk, and the CDEV comes with several preprogrammed settings for games like the Falcon flight simulator.



MARK JOHANN

From top to bottom: Gravis ADB MouseStick (two pieces); Turbo Mouse ADB; A+ Mouse ADB

Turbo Mouse ADB

Kensington's Turbo Mouse is really an upside-down mouse that the video game manufacturers call a *trackball*—a large ball sitting on top of three rollers that enable the ball to move freely in all directions. The rollers also sense the ball's movements and translate these into signals that move the mouse pointer on the screen. There are two buttons for the thumb, at the left and the right of the ball. One works like the mouse button, and the second is a mouse-button lock that functions like the Caps Lock key on the keyboard. You can also set the DIP switches of the mouse to generate special key commands when the two buttons are *chorded*, or pressed at the same time.

There is a large difference between the action of a Turbo Mouse, where the fingers do all the work, and a regular mouse where the hand and arm move the controls. I often found myself using only my index finger to roll the ball when making precise drawings. One advantage of the Turbo Mouse: it's always in the same place, so there's no need to grope around for it. The Turbo Mouse is designed to sit harmoniously next to Mac keyboards. It's well made—the manufacturing is just as good as the design. The plastic is solid, the

(continues)

RasterOps Professional 24-bit Color

The best 32-bit Color QuickDraw card that you can buy: The ColorBoard 224.

This board sets the standard for 24-bit Macintosh® color. Drive a variety of monitors, from Apple's® affordable 13", up to our professional, 19" Trinitron. Accelerate your work with selectable bit modes — from 1-bit to 24-bit. Use the full 1024 x 1024 in 24-bit mode resolution with our built-in pan and zoom features — no matter what size monitor you choose. And when you get ready to move into desktop video, just add our SFX™ Video System to the built-in adaptor, and you have a video studio.

300 Nanosecond Bus Cycle

These 1 Megabit Video RAMs provide more memory in less space, and operate at 100 nanosecond speeds, providing the fastest possible read-write cycles available on the Macintosh.

Extra Screen Memory

With the ColorBoard 224, there is actually enough onboard memory to work with 1024 x 1024 of 24-bit information in any application. Users can access this available display by "bumping" the mouse at the bottom of the screen to instantly reach the information not shown by the 1024 x 768 screen. The 224 also allows you to drop the bit depth of the display so you can define virtual screens of 2048 x 1024 and 4096 x 1024.



The RasterOps ColorBoard 224 is fully compatible with Apple's 32-bit Color QuickDraw. RasterOps is an Apple licensed supplier of the Apple 32-bit color QuickDraw system software.

Power Draw

Power and heat. Your board draws its power through the NuBus. Apple specifies a maximum of 2.1 Amps per slot at 5 volts. Other boards often violate the 2.1 restriction set by Apple. Amps mean heat, which is deleterious to your Macintosh, and a drain on the power supply. The RasterOps ColorBoard 224 needs less than 1.9 Amps. Your system runs cooler. You can use other slots without fear of overloading your power supply.

Set Gamma and DirectSetEntries

Your ColorBoard 224 directly supports Apple's DirectSetEntries and SetGamma QuickDraw instructions in hardware. Instantly see the effect of changes to your color image. You can watch the color tones change as you move the mouse. Without this dynamic support, you have to guess at the color correction, enter the new value, and wait for the new screen to repaint. No waiting with the 224.

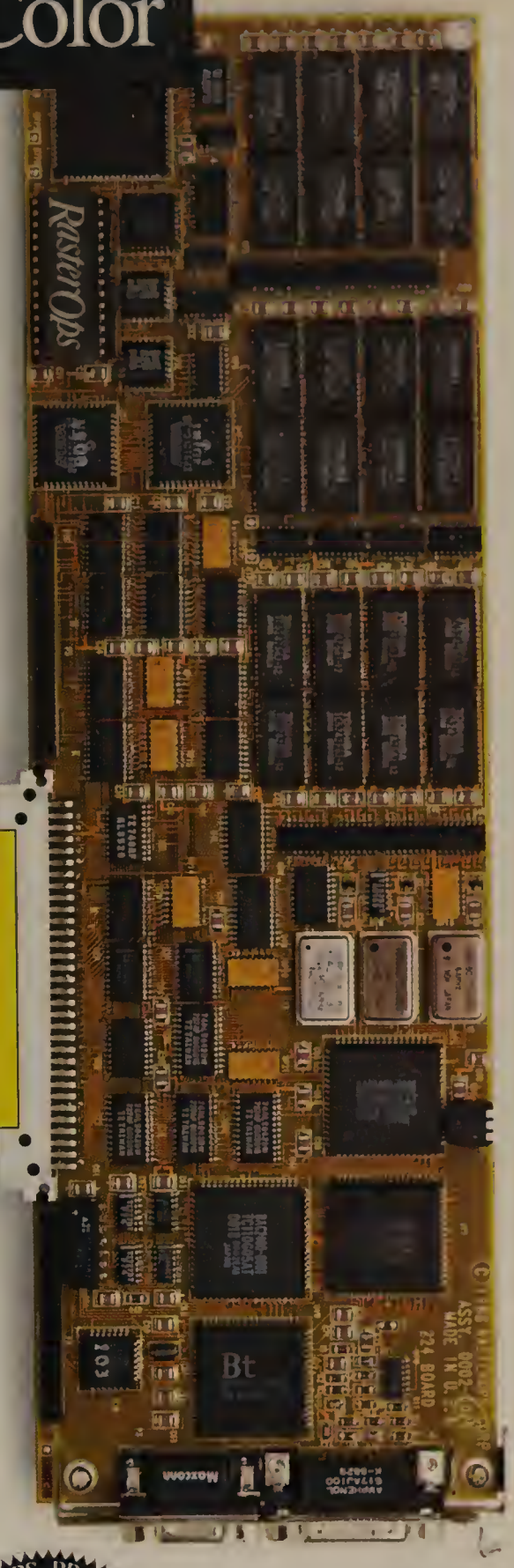
The RasterOps ColorBoard 224 is more than the industry's outstanding 24-bit board. It also lets you expand into advanced desktop video applications. The onboard connectors let you attach our SFX video board, that delivers the features of a multimedia studio on a single card. Only RasterOps.

Pan and Zoom

Utilizing the advanced circuitry of the 224 Chip Set, the board is capable of instantaneous hardware pan and zoom. This function takes no CPU time or processor RAM and allows users to zoom in 2x and 4x while in any application in the blink of an eye. The panning rate is user-selectable and is initiated automatically when your mouse nears the edge of the screen. No more waiting for the screen to redraw to see the details of your work.

Triple Oscillators

Three separate oscillators. One for use at a resolution of 1024 x768 with the RasterOps 19" color Trinitron monitor. The second oscillator for use at a resolution of 800 x 600 with the RasterOps 16" color Trinitron Monitor. And a third for use with Apple's 13" color monitor at a resolution of 640 x 480 pixels.



ALL RASTEROPS PRODUCTS COME WITH A FULL 1 YEAR WARRANTY

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Dealers Circle 110 on Reader Service Card
End Users Circle 455 on Reader Service Card

ball rolls smoothly, and the precision of the mechanism is quite good.

As You Like It

Each of these input devices offers an entirely different solution for people with particular needs. The A+ Mouse won't break down as readily as a mechanical version, but it requires a special mouse pad. The Turbo Mouse is really a trackball (and my favorite because I like using my fingers). And the game-player who wants a joystick that is very customizable cannot go wrong with the Gravis MouseStick.
—*Peter Wayner*

See Where to Buy or circle 708 (A+ Mouse ADB), 761 (Gravis ADB MouseStick), and 863 (Turbo Mouse ADB) on reader service card.

MACSCUBA 1.02

Diving Simulator

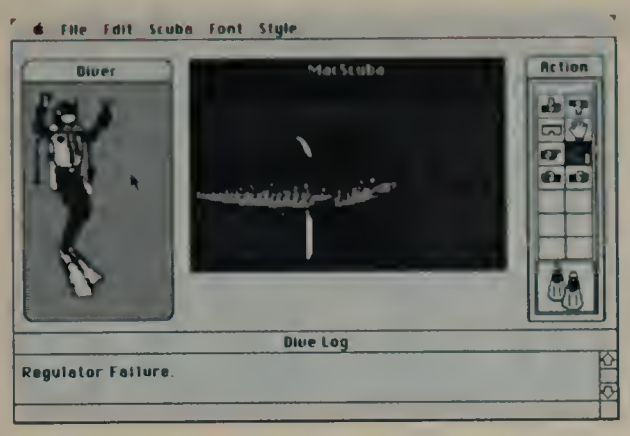
Pros: *Realistic animation of equipment and motion; emphasizes adherence to diving safety tables; colorful information on marine life.* ***Cons:*** *Scenery is repetitive; some features poorly documented; turns are restricted to 90-degree angles.* ***Company:*** *Paradise Software Corporation.* ***Requires:*** *Mac Plus; second disk drive.* ***List price:*** *$49.95.*

If you'd rather tackle a tiger shark in 100 feet of water than update a spreadsheet, your ship has come in. MacScuba, a black-and-white diving simulator from Paradise Software, provides a good time for crusty divemaster and curious wader alike.

MacScuba is both an educational tool and a game. The challenge is to gather treasure from a sunken ship while following the fundamental rules of diving and adhering to U.S. Navy dive tables. The program's effort to combine gold doubloons with decompression stops is sometimes strained, but MacScuba's overall blend of realism and whimsy is refreshing.

A Few Deep Breaths

You begin your dive on the deck of a boat by clicking on a small window called Dive Bag. Shazam! You appear as a Diver in the window, ready to jump in the water. But first, for survival's sake, check out your equipment. Be methodical, even ritualistic, and you'll find MacScuba does a nice job of introducing and reinforcing this safety procedure concept. The program rewards you with a realistic *psssssshhhhht* when you test your breathing instruments, and gives you 2500 pounds per square inch (psi) of pressurized air just for clicking on the Fill Tank box. In a true-to-life touch, if you have inflated your buoyancy control vest, you bob around after you jump in; otherwise, you sink like a stone. In either case, there's a gratifying splash when you enter the water. MacScuba's attention to these early stages of a dive is one of its primary strengths as a simulator.



Deep Trouble
MacScuba divers must be prepared to handle dangerous situations. Feisty fish and faulty hoses might lurk in your monitor.

The Basic Diver level can be a snoozer unless you want to be religious about learning how to use the U.S. Navy dive tables (included in both the documentation and the software) and how to compose an accurate dive plan. Although that's pretty much all you can do at this level, it might be worth postponing the Advanced Diver adventure if your goal is to bone up for a certification test.

The Advanced Diver simulator involves scouring a sunken wreck for treasure while drifting through a maze of chambers. Compass navigation is essential for keeping your bearings. The animation of the ship's passageways becomes achingly repetitive, however, which defeats the simulation effect, as there are no true landmarks to go by. It's too bad the documentation doesn't include at least a rough map. To MacScuba's credit, it portrays the inherent dangers of the situation so realistically that you have to coolly resist the urge to bolt to the surface when you've been lost in the maze for a while.

MacScuba's documentation discusses in detail the procedure for creating and filing a Dive Plan. You can choose multiple dives with surface time in between to allow the nitrogen in your body to dissolve; you can also plan deep dives with decompression stops on the way up.

Underwater Action

Throughout your dive a large through-the-mask Diver window, an Action window, and an information box are present on the screen. The Action window is a palette of movement options represented by hand symbols, allowing you to ascend, descend, move left or right, grab, go forward, and take the action called for, such as open a door. Navigation is cumbersome, as you are restricted to turning at 90-degree angles only.

There is also a mask for viewing objects—double-clicking on an object gives you a brief rundown on it in the information box. The mask is the key to using MacScuba's database of marine life. As you dive, a number of nicely drawn sea creatures drift past your mask. Grab a squid and get the message, "Slippery little devil!" Click on a fish with the mask icon selected and learn the fish's scientific and common names, habitat, coloration, and other details.

Useful information, and wry or silly comments, are woven throughout the dive adventure. While I admit that being chewed up by a hammerhead in the ship's galley was pretty exciting the first couple of times, there is a disturbing emphasis on shark attacks and knife wielding (presumably to make this a more universally appealing adventure). Stabbing non-dangerous fish, however, results in a crisp rejoinder: you've been penalized 100 psi for wanton bloodletting. More marine life, less *Jaws II* animation, and fewer clichéd pirate flourishes would have been preferable.

Nevertheless, MacScuba is a great opportunity to ditch that database, blow some bubbles, and get wet on a workday.—*Annie Jenkel*

See Where to Buy or circle 786 on reader service card.

The one on the right is easier to publish.



The image on the right is a copy.

We scanned the photograph on the left with an Abaton Scan 300/GS 8-bit scanner, dropped it into our favorite desktop publishing program, and produced the image on the right using a phototypesetter.

At first we were all a little leery. How can a $2200 scanner for the Mac reproduce photographs well enough to run in an ad? The answer lies in the design of the Abaton Scan 300/GS. It's an 8-bit scanner capable of capturing 256 shades of gray, so it gathers 16 times as much information from a photograph as a 4-bit scanner. That means more of the subtlety and richness of the original black-and-white photograph is preserved in the scanned image. And the Abaton Scan 300/GS even comes with Letraset's Image Studio software, so you can clean up, change, or rearrange your image easily.

Abaton also offers an 8-bit upgrade package for your 4-bit Abaton and Apple scanners. The upgrade will be installed at your home or office in less than 30 minutes.

It's part of Abaton's commitment to making your ideas easier to publish.

TheAbaton Scan 300/GS certainly makes our ideas easier to publish. With it, we can reduce the production time and costs. Perhaps equally important, the Abaton Scan 300/GS has eliminated a lot of headaches. Now our art directors can wrap text around black-and-white photos and not have to worry about accurate scaling or someone misinterpreting their scrawls.

In the same amount of time, we can review more options because the art department spends more time on concepts.

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We Make Your Ideas Easier to Publish™

ACCU-WEATHER FORECASTER

Weather-Forecasting Software

Pros: *Fully automates downloading of data.* ***Cons:*** *Labyrinthine documentation; not fully MultiFinder compatible.* ***Company:*** *Metacomet.* ***Requires:*** *Mac Plus; modem.* ***List price:*** *$89 plus online charges.*

Accu-Weather Forecaster lets you forecast the weather, via quite an intuitive interface, by accessing data collected by the Accu-Data weather computers from over 1000 ground observation stations around the United States and many more around the world.

Every hour, over 1000 U.S. weather-reporting stations perform a standard set of weather observations that are transmitted to a database at the National Weather Service and then immediately transmitted to the Accu-Data database, where they are made available to the public. Accu-Weather Forecaster lets you predefine and focus a request for weather data by specifying the times and locations you want to query.

The Define Request dialog box prompts you with a list of choices for local (your nearest weather station), remote (stations elsewhere, which you can select individually or by a region that you define by drawing a rectangle on a map), and national weather summaries. In addition to the most current data, you can also choose the number of past *hourlies* to download for each location.

After you define a request and log on, the rest is automated. Accu-Weather autodials the Accu-Data database in Pennsylvania, logs on, downloads the requested data, logs off, shuts down the modem, and converts the data into text and graphics.

The Highs

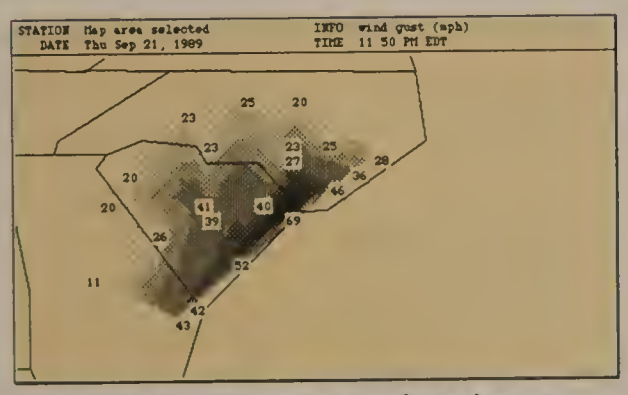
Once offline, Accu-Weather Forecaster archives the downloaded data for later use. A standard set of weather data—including barometric pressure, temperature, dew point, wind direction, wind speed, wind gust, visibility, precipitation, cloud base, cloud amount, and fog—can now be manipulated in several ways.

The Overlay Graphs mode enables you to compare various types of information for a given station. For example, you could compare the barometric pressure, cloud base, and temperature measurements over a number of hours to demonstrate how their relationship changes during the onset of a storm. Comparing different types of data helps in understanding how different forces shape the weather.

The Maps command enables you to draw low-resolution maps for the entire United States or any selected region, and displays information either as actual values or as contour shading. These are similar to the temperature-value maps shown on television, and they can be generated within minutes of actual observations. A future release will incorporate isobars (lines connecting places with the same barometric pressure) into the mapping functions, which should make reading the otherwise low-resolution maps a little easier.

Using the Picture command you can request a cross-section of the atmosphere for a particular hour at a station, showing cloud conditions up to 15,000 feet, as well as temperature, dew point, barometric pressure, and wind direction. The List command shows actual number values for these measurements from stations around the country or a selection of stations.

Accu-Weather Forecaster enables you to access simple as well as complex information. If you just want to know what the NWS thinks the weather will be like today, Accu-Weather gives you the same text that is read in countless radio and television station studios throughout the country.



This map shows wind gusts in South Carolina just before Hurricane Hugo arrived. The numbers show actual wind speed in miles per hour, and the shading helps you visualize the information.

The Lows

If you happen to live on the West Coast, making forecasts can be a bit tricky. The reason is simple: most weather travels from west to east, following the jet stream. Ground weather station observations for what's coming off the Pacific Ocean are nonexistent. Observational data from sources other than ground stations is available in the Accu-Data database but not through the Define Request command's automated downloading feature; you must hunt for the data online, using Explore Accu-Data, which is not as easy as an autodownload.

Another small complaint is that the Save Screen command for making screen shots of data and weather maps isn't compatible with MultiFinder. I found that after saving the fourth screen shot, the program would unexpectedly quit to the desktop. Metacomet suggested I use the Finder when making screen shots, and that seems to work fine. Lastly, the manual seems to be about twice as long as it needs to be.

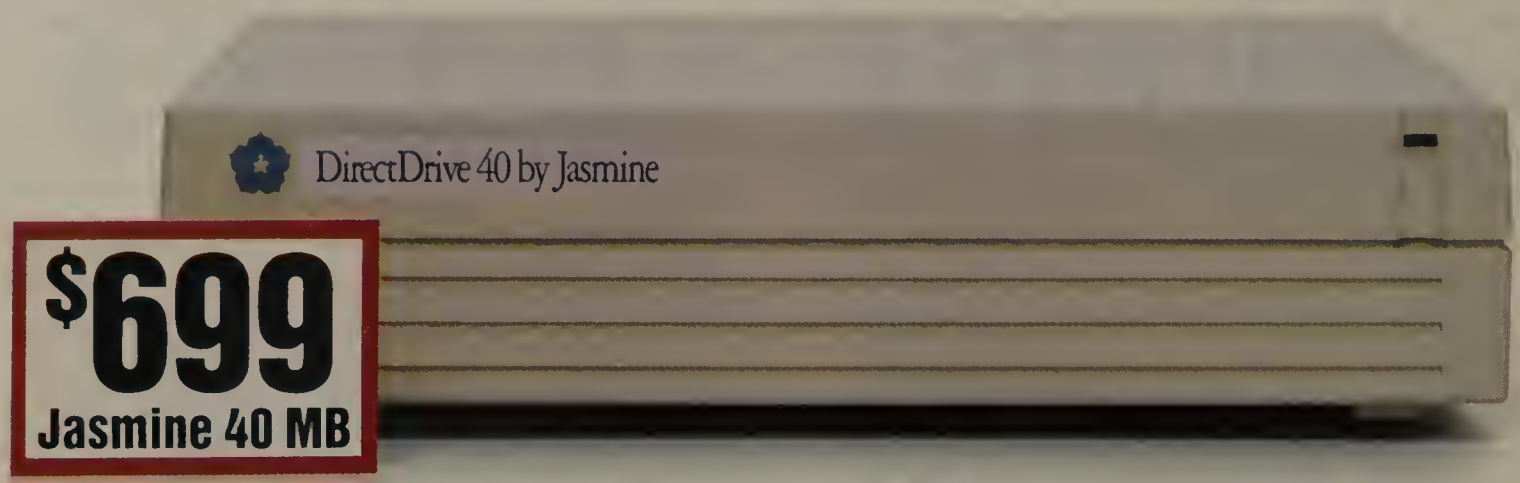
Pennies from Heaven

The Accu-Data online billing system offers commercial, educational, and personal rates. The personal-rate structure, the lowest, includes an initial sign-up fee of $39.95 and a surcharge of $10 per month. (Metacomet includes demo data disks for you to practice with while you wait about ten days for your subscription and password to arrive.) Online charges run from 18 cents a minute for night use, to 38 cents a minute during the day. You must also add in the cost of the long-distance toll call, or use the 800 number for an added 18 cents a minute. The typical download time of three to four minutes puts the average cost per call at around $2. All this can vary, of course, according to the time and the rate structure.

Accu-Weather Forecaster is a useful and informative program that makes it possible to visualize a complex event—the weather—in simple ways. And Metacomet has done an especially fine job organizing a vast amount of data into visual metaphors for rain, snow, sleet, and sunshine.—*Donald Matthew Smith*

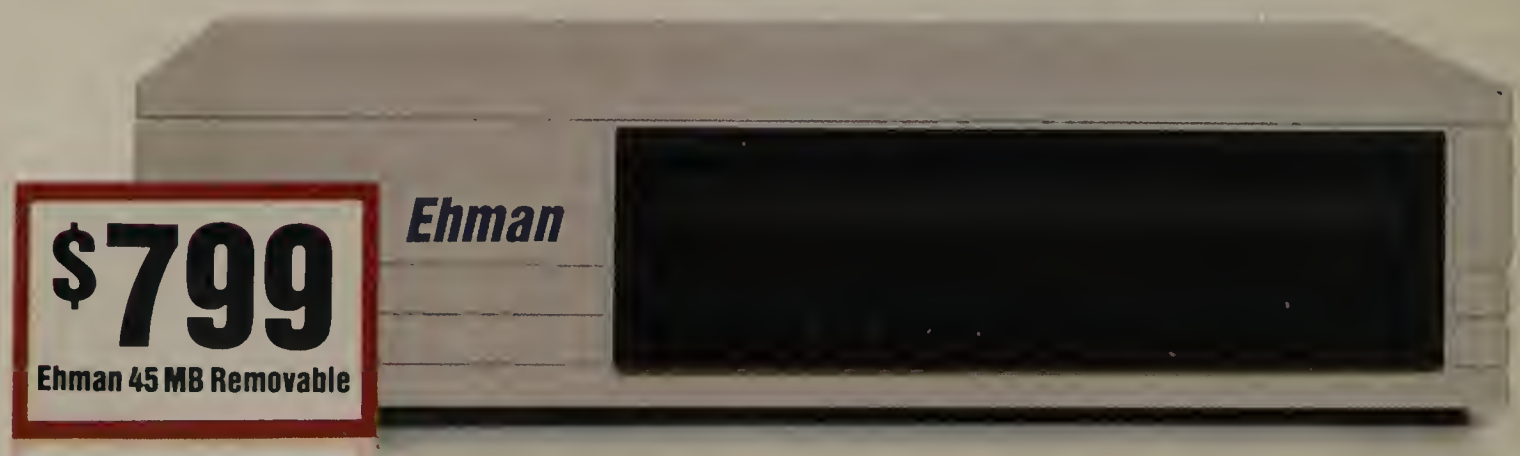
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QUICKEYS 1.2

Keyboard-Enhancement Utility

Pros: *Fast; macros can be assigned to any key; included utilities add excellent value.* ***Cons:*** *Creating multistep macros can be tedious; not suited to recording real-time events.* ***Company:*** *CE Software.* ***Requires:*** *512KE.* ***List price:*** *$99.95.*

TEMPO II 1.02

Keyboard-Enhancement Utility

Pros: *Easy to use; macros are very reliable, even when windows are repositioned.* ***Cons:*** *Macros assigned to numeric keypad keys or the Esc key must include additional modifier key; less responsive than QuicKeys.* ***Company:*** *Affinity Microsystems.* ***Requires:*** *Mac Plus.* ***List price:*** *Version 1.026.1 $149.95.*



Macintosh gospel has it that the keyboard is a second-class input device, used only for entering text and issuing the occasional menu command. The mouse is supposed to be the primary link to the computer. But with a keyboard-enhancement utility you can break this commandment and turn the keyboard into a control center for issuing commands and replaying mouse movements. You can create your own keyboard shortcuts for choosing commands, recalling frequently used text, playing back repetitive tasks, and starting programs. MacroMaker—which comes with the Mac's system software—lets you tackle some of these automation tasks, but you're likely to outgrow it. When that happens, look to CE Software's QuicKeys and Affinity Microsystems' Tempo II.

Both QuicKeys and Tempo II operate as INITs, loading into memory during start-up. Both use memory sparingly: QuicKeys consumes about 48K, while Tempo II requires roughly 52K.

But this common ground aside, each utility takes a different approach to keyboard customizing. After several weeks of working with them, I have yet to decide on a favorite. In fact, I've become addicted to both.

All This and Tempo II

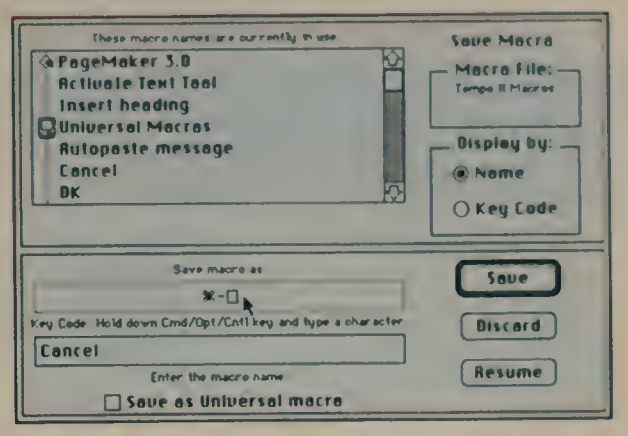
On the surface, Tempo II works like MacroMaker: it adds its own menu to the menu bar and appears in all applications. To create a macro, you enter Tempo II's record mode, perform the tasks you want to record, stop the recording, and assign the macro to a key sequence (see "Setting the Tempo").

Behind the scenes, however, Tempo II works to create macros that are more reliable than MacroMaker's. For example, when you use MacroMaker to record a macro that chooses a menu command, MacroMaker remembers the command by its position in the menu, not by its name. If the position of the menu changes as the application runs (a common occurrence), the macro will not play back properly. Tempo II, however, remembers menu commands either by name or by position. The latter option is useful when you are working with menu commands whose wording changes (for example, Show Ruler/Hide Ruler).

Another example of Tempo II's intelligence surfaces when you're recording macros that start programs. MacroMaker simply records that you double-clicked the mouse at a specific point on the screen; Tempo II records that you started a specific program. If you move the program to a different location on the desktop, the macro still works.

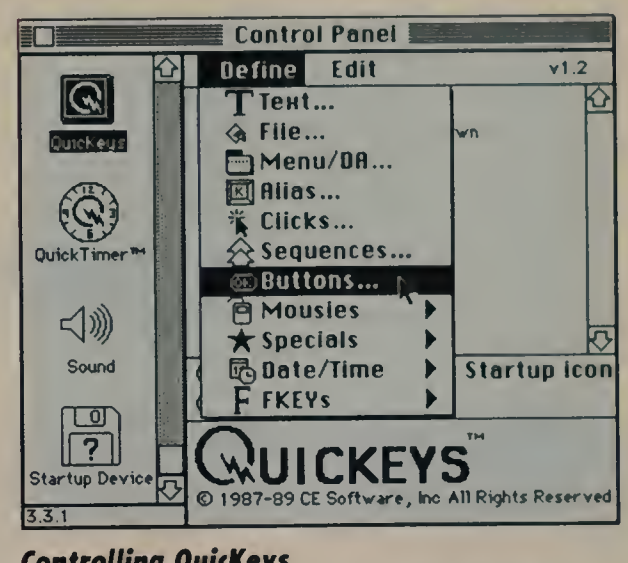
When MacroMaker records, it doesn't keep track of the mouse pointer's path or of the time that elapses between clicks or keystrokes. Many macros don't need this information, but some do—for example, a macro that draws a specific shape in a drawing program, or one that waits a few seconds before typing text in a communications program. With Tempo II, you can record the timing and mouse-path information. When you play back your macro, the Mac looks as if it's operating by remote control.

I do have one gripe with Tempo II. To assign a macro to a key on the numeric keypad or to the Esc key, you must combine the key with a modifier key, as in Control-Esc or ⌘-Clear. Therefore, you cannot create a macro that clicks on a Cancel button when you press Esc, nor can you turn the numeric keypad into a set



Setting the Tempo

If you want a Tempo macro to be available in all programs, click on the Save as Universal Macro check box. Otherwise, the macro is available only with the program that was running when you created it.



Controlling QuicKeys

QuicKeys doesn't use Tempo II's record-and-play-back approach. Instead you select the type of event you want the macro to recreate by choosing commands from QuicKeys' menus.

of function keys. Both MacroMaker and QuicKeys, in contrast, let you assign macros to the Esc key and to unmodified keypad keys.

The QuicKeys Difference

QuicKeys doesn't use MacroMaker's and Tempo II's record-and-play-back approach, nor does it add a menu to the menu bar. Instead, QuicKeys uses a Control Panel device (CDEV) whose menus list the types of event that QuicKeys can recreate (see "Controlling QuicKeys").

This difference in approach is most apparent when you want to create a macro that performs several steps, such as opening the Scrapbook, choosing Paste, and then closing the Scrapbook. With QuicKeys you must chain individual macros, each of which performs a specific

(continues)

We couldn't claim that *NEW FASTBACK II* is the most powerful backup system on the market

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Feature	FASTBACK II	DiskFit 1.5	Redux 1.5	HD Backup
Back up to any HFS device	YES	YES	YES	YES
Data compression	YES	NO	NO	NO
Auto-formats without time lapse	YES	NO	NO	NO
Restores backups from PC	YES	NO	NO	NO
Built-in macro	YES	NO	NO	NO
Scheduled macros	YES	NO	NO	NO
Multiple setup files	YES	NO	#	NO
Prints labels (ImageWriter & LaserWriter)	YES	NO	NO	NO
Speed: Kbyte/Min (Mac SE)	**1000**	273	267	200



Allowed to save preferences, not multiple setup files.

And these are merely a few of the many exclusive features that make new ***FASTBACK II*** the fastest, easiest and most powerful backup software for the Mac you can buy. Only ***FASTBACK II*** gives you data compression and compatibility with virtually any HFS device. And you'll have data security features that assure the safest backup you can make. You'll have maximum file selection flexibility with powerful backup and restore options so you can easily tailor the process to your own particular needs. In short, you'll finally have a system that ensures regular backup. ***FASTBACK II.*** Specifically created for the Mac, and designed to fit smoothly into your corporate computing environment.

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Signature _____ Check # _____ Amount enclosed* _____

Credit card # _____ Exp. date _____

Name _____ Title _____

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Dealers circle 364 on reader service card
End Users circle 250 on reader service card

step, into a *sequence*. The process can be tedious.

Creating macros that simulate mouse movements and double-clicks is also awkward in QuicKeys. Creating a macro that opens the icon of the start-up disk, for example, requires more than a half-dozen steps. You cannot create macros that record how the mouse moves across the screen, and it's difficult to create macros that tear off menus because QuicKeys alters the menu bar when you're creating a macro.

I also found QuicKeys less reliable than Tempo II for creating macros that activate palette tools in programs such as Aldus PageMaker, MacDraw II, and MacPaint 2.0. If you move a palette so that some of its tools disappear off the screen, macros that activate those tools won't work.

But QuicKeys has its strengths. It's loaded with built-in macros that insert the time and date, scroll windows, select inactive windows, insert true opening and closing quotes, restart or shut down the Mac, and more. And you can assign a macro to any key, with or without a modifier key. If you like, you can rearrange the Mac's entire keyboard layout. (QuicKeys includes a settings file for the well-known but little-used Dvorak layout.)

The QuicKeys package includes some extra goodies as well. An INIT called DialogKeys lets you choose dialog box options from the keyboard. Another INIT, QuickTimer, lets you specify that QuicKeys play back a macro at a particular time, at specific intervals, during start-up, or when you start up a given program. There is also a copy of Vaccine, which is a virus-detection utility, and an application that prints keyboard templates (excellent for the extended keyboard's function keys).

Tempo II? QuicKeys? Or Both?

Tempo II is a bit slower than QuicKeys, but it is easier to learn and use. QuicKeys is better suited to creating menu command shortcuts as well as scrolling and window-navigation shortcuts. QuicKeys is the utility of choice for rearranging keyboard layouts, and it's considerably less expensive than Tempo II. If I had my druthers, I would combine QuicKeys' library of canned shortcuts with Tempo II's recording talents and ease of use. For now, the only way to do that is to use both utilities.

It sounds like I'm waffling, but there is no clear-cut winner here. If you're a keyboard-shortcut junkie, you'll want both QuicKeys and Tempo II. But if you must pick only one, let the issues of mouse movements and timing be the deciding factors: if you need to record mouse movements and timing information, buy Tempo II. Otherwise, pick QuicKeys.

—Jim Heid

See Where to Buy or circle 826 (QuicKeys) or 853 (Tempo II) on reader service card.

TURBOBRIDGE 1.0

Network Router

Pros: *Fast, slowed only slightly by cross-network traffic; easy to set up.* ***Cons:*** *You can only configure one TurboBridge at a time; software does not recognize other routers or provide a list of assigned network numbers.* ***Company:*** *Nuvatech.* ***Requires:*** *Mac 512KE; LocalTalk cabling or equivalent.* ***List price:*** *$499.*



Routers (formerly called bridges by Apple) are an important component of AppleTalk networking because they enable you to expand AppleTalk networks beyond Apple's recommended 32-node limit for LocalTalk. One of the newest, and fastest, routers on the market is NuvoTech's TurboBridge.

What's in a Name?

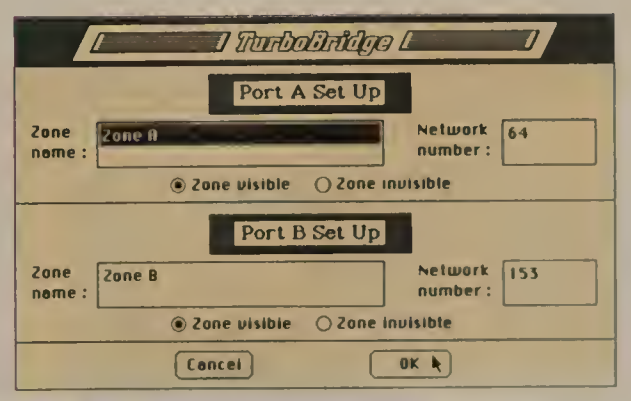
Like all AppleTalk routers, the TurboBridge contains two ports, one for each connected network. Router initialization involves assigning a number to each network (if one hasn't already been assigned by another router attached to the network). Once you connect two networks with a router, the AppleTalk protocols allow you to assign a *zone name* to each network. Networks so linked are called an internetwork, or internet.

The TurboBridge configuration software is easy to use, as it only allows you to name the zones for each port and number the networks (see "Pick a Zone"). The simplicity of the software, however, makes it less useful than other routers for configuring larger internets. For example, you cannot give each router a name, as you can with the Hayes InterBridge, Shiva NetBridge, or Solana I-Server. Because you can't name TurboBridges, you can only have one TurboBridge on at any time when you're configuring an internet—a distinct inconvenience for any network manager.

The TurboBridge configuration software doesn't offer any network-management tools for dealing with multiple routers. In addition to this limitation, during configuration the software doesn't recognize previously assigned network numbers. It would be nice if the software would poll the internet and provide a list of assigned network numbers. As it is, the network manager has to rely on his or her own bookkeeping to guarantee that the TurboBridge assignments do not conflict with existing assignments. Router configuration software from other vendors does a much better job of accessing internet information.

The TurboBridge also suffers from a problem when used with other manufacturer's routers. Apparently it cannot resolve its zone names with those stored in other routers. This results in duplicate

(continues)

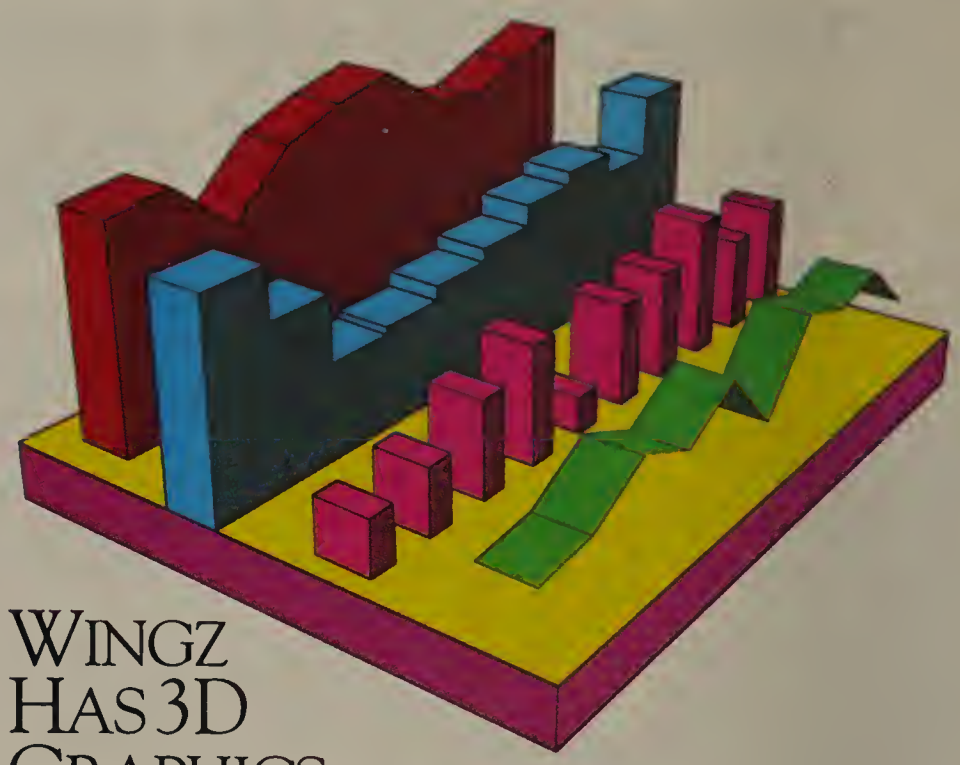


Pick a Zone

Invoking the TurboBridge configuration software brings up just one display: you can assign network numbers and zone names. No other information about the internet is provided. As a security measure, you can declare a zone invisible—only users within that zone will see it in the Chooser DA; all users outside the zone will not detect it.

GRAPHIC PROOF THAT WINGZ™ HAS MORE.

The more you work with numbers, the more you'll like working with Wingz. Wingz is the fastest, easiest way to transform your raw data into eye-catching persuasive graphic presentations. What more can we say? Wingz simply has more. Which means every other spreadsheet has less.



WINGZ HAS 3D GRAPHICS.

3D graphs make your data more understandable and more impressive. And Wingz is the only spreadsheet with built-in 3D graphic capabilities. Wingz features 3D bar, 3D line, 3D layer, 3D step, 3D pie and 3D combination graphs. You can change the rotation, elevation and viewing distance of your 3D graphs.

WINGZ HAS DRAWING TOOLS.



The Wingz drawing tools give your work a finished look quickly and easily, without using another software application. Choose from line, arc, circle, rectangle or polygon tools. And after you've drawn the basic shapes, you can color, size, group and move them.

WINGZ HAS UNLIMITED COLOR AND FONT SELECTIONS.

Color enhances the appearance of your data. And Wingz maximizes your use of color. In fact, the number of color choices is limited only by your hardware.

If you have a 24 bit color system, you'll have over 16 million color choices when you enter our custom color mixing dialog box.

WINGZ HAS HYPERSCRIPT.

You don't have to be a rocket scientist to do powerful, work-saving programming in Wingz' HyperScript. (Although a lot of rocket scientists are using Wingz.) HyperScript unleashes the full power of the Macintosh.® HyperScript uses intuitive English language commands, not abstract jargon.

For example, to hide the cell grid with Excel macros would require:

=DISPLAY (false, false, true, true, 0)

To perform the same action in HyperScript:

HIDE CELL GRID

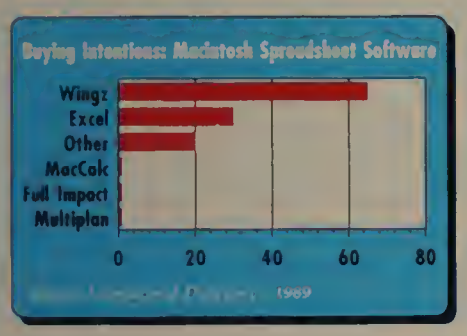
It's that simple.

WINGZ HAS HAPPY USERS.

User Satisfaction	
Rank	Spreadsheet
1	Wingz
2	Excel
3	Full Impact
4	Other
5	MacCalc
6	MultiPlan

According to International Data Corporation (July, 1989), Wingz ranked number one in user satisfaction among Macintosh spreadsheet users.

WINGZ HAS FUTURE USERS.



The same survey found Wingz an eye-popping two-to-one favorite when people were asked which spreadsheet they intend to buy in the next six months.



WINGZ HAS BUTTONS.



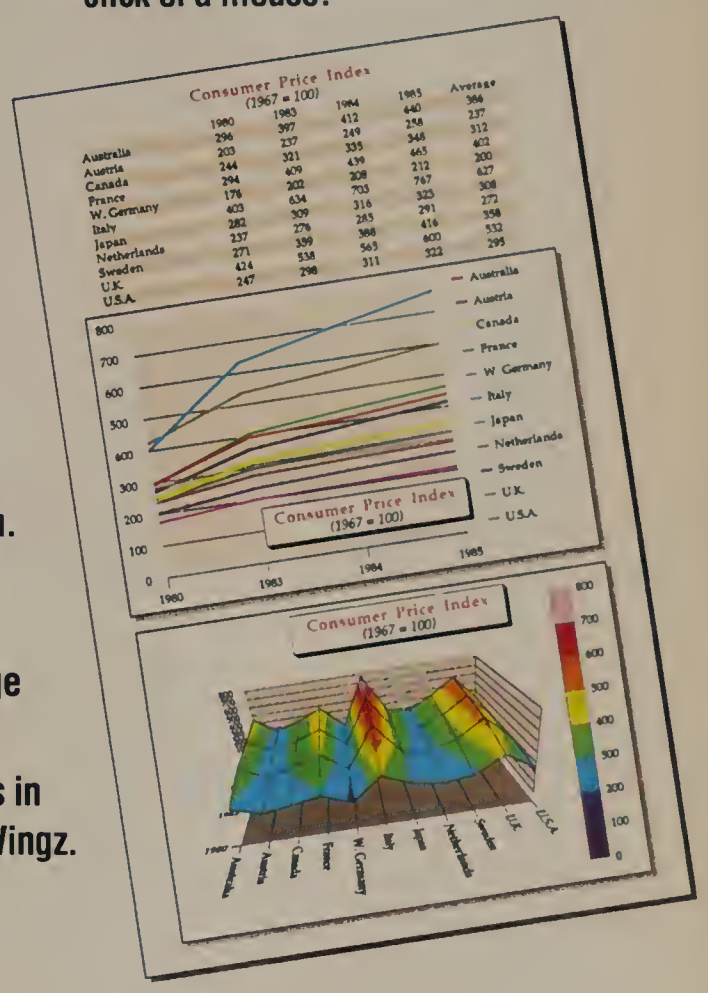
Buttons can make your spreadsheet as easy and natural to use as the radio or the dishwasher. They're easier and faster than menus or typing in commands. (You can also put other Macintosh controls, including radio buttons, check boxes and slide bars, directly onto the worksheet.) Just as important, buttons unleash the power of HyperScript. So you can attach lists of frequently used commands to buttons, and then execute them with the click of a mouse.

WINGZ HAS PAGE PERFECT OUTPUT.

When your reports and graphs look great, so do you.

And unlike Excel, Wingz combines words, numbers and graphics all on one page with just one product.

By the way, all the graphics in this ad were created with Wingz.



NOW IF WINGZ HAS ALL THIS, SHOULDN'T YOU HAVE WINGZ?

Just call toll-free 1-800-331-1763, ext. 1000, to find the Wingz dealer nearest you. In Canada call 416-566-7024.

Circle 390 on reader service card



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zone names in a user's Chooser DA. Although this may look confusing to the user, it does not affect selecting network resources in any zone.

Plugging In

The TurboBridge already has PhoneNet-style connectors built into the box, but if you are planning to use the TurboBridge with Apple's own LocalTalk connectors, you will have to buy LocalTalk-to-PhoneNet adapters. The TurboBridge does provide two connectors for each port so that you can place the router anywhere in a network, rather than just at one end of a daisy chain. The built-in connectors are self-terminating (something the TurboBridge manual neglects to mention), which might be cause for concern if you are going to be mixing and matching connectors.

Routing Traffic

I set up a series of tests using two AppleShare clients and two AppleShare file servers to test the TurboBridge's efficiency in routing packets between two connected networks. The TurboBridge is aptly named, being faster than any other router I've tested, with only a 5 percent delay in server access when compared to a network without the router installed. (In my tests, with other routers the delay was anywhere from 20 percent to 200 percent in the same network.) In addition, the TurboBridge exhibited the smallest additional delay due to what I call cross-network traffic (that is, traffic from network A to network B competing with traffic from network B to network A). That's good performance.

If you are setting up a simple internet of only two or three networks, then the TurboBridge definitely deserves your consideration. However, in larger internets I would hesitate to use the TurboBridge because the configuration does not include software router naming. Although it's a good buy—particularly in terms of price and performance—the TurboBridge doesn't compare with the Shiva NetBridge (which also costs $499) when it comes to configuration support on large internets.

—Dave Kosiur

See Where to Buy or circle 862 on reader service card.

SYNCHRONICITY 2.0

Tool for Intuitive Decision-Making

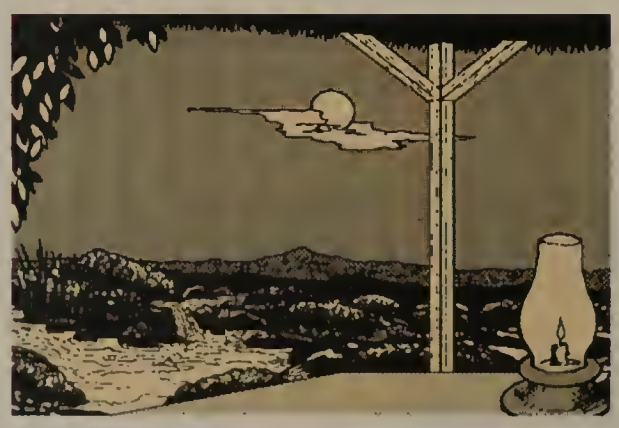
Pros: *Easy to follow and use; soothing sounds and graphics effective for reducing stress.* ***Cons:*** *Cannot use MultiFinder icon during program; no way to bypass instruction screens.* ***Company:*** *Visionary Software.* ***Requires:*** *Mac 512KE, System 6.0.2 or later for sound.* ***List price:*** *$49.95.*



Now for something completely different—take a relaxing break without leaving your desk. Enjoyable and intriguing to use, Synchronicity is an interactive program based on the ancient Chinese *Book of Changes,* also known as the *I Ching,* as well as on psychology pioneer Carl Jung's law of synchronicity, which postulates that all things are connected and that so-called coincidence is meaningful.

A Keyboard Ritual

Type a question and Synchronicity provides a response to help clarify and resolve the issue. The response is selected from 64 main readings and over 266,144 permutations, such as Enthusiasm, Treading Carefully, and A Tempting Encounter. The program selects your reading randomly (or according to the law of synchronicity, depending upon your outlook) when you press any key or keys three times. Timing, rather than the specific keys you press, determines your response—as with a slot machine's spinning tumblers.



Relaxation Screen

Imagine you're on a deck or a porch softly lit by a candle, gazing out at the horizon. The waterfall flows realistically, and frogs croak at random intervals.

The responses I received generally fit the questions—with at least as much accuracy as I've found using the *I Ching.* In addition to providing useful answers, Synchronicity can be an effective reminder to relax while focusing on a question. The manual suggests that you ask a particularly thorny question several times in slightly different ways and then compare the answers. On several occasions, the answers prompted me to consider new aspects of a problem. The text of the readings is lighthearted and well written. Readings can also be saved or printed for future reference.

Superb Aesthetics

Although the program was developed in Think's Lightspeed Pascal, Synchronicity has a HyperCard feeling—no menus, just a series of artistically rendered screens with buttons for navigating. The art is a superb black-and-white drawing of a Japanese garden, including an animated stream. Transitions between screens on a Mac SE or Mac II with an Apple monitor are handled with a dissolve. Transitions on non-Apple monitors are less impressive, the transitional device being a collapsing and expanding iris. (I used an E-Machines' Big Picture 17-inch monochrome monitor.)

Visionary Software is promoting Synchronicity as mood-altering software; the program provides a soothing environment with visual prompts to help you relax. Volume-adjustable sounds of water flowing, frogs croaking, and gongs accompany the peaceful settings. Personalized prompts and answers make you feel as if you're talking to a friend. It was comforting, in the middle of a hectic day, to boot up Synchronicity and see the invitation, "What's on your mind, Mary?"

Tool or Game?

Synchronicity always responds in a personal and friendly manner. I would recommend Synchronicity to anyone who is open to the idea that software can help bring a problem into clearer focus and be fun for the user. Synchronicity is entertaining software designed for serious use.

— Mary E. Tasner

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WYSIWYP

(What you see is what you project.)

See these colors?

They're bright. Brilliant. Vibrant. Because these colors are being projected just as they appear on your computer screen. By the true-color LCD projection panel from In Focus Systems. The 480C PC Viewer.™

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MULTI-AD CREATOR 1.2

Display Ad Layout Program

Pros: *Easy to learn and use; powerful set of ad layout tools, especially special-effect tools; many color output options.* ***Cons:*** *Only supports single-page documents; expensive.* ***Company:*** *Multi-Ad Services.* ***Requires:*** *Mac Plus; hard disk. Mac II recommended.* ***List price:*** *$995.*

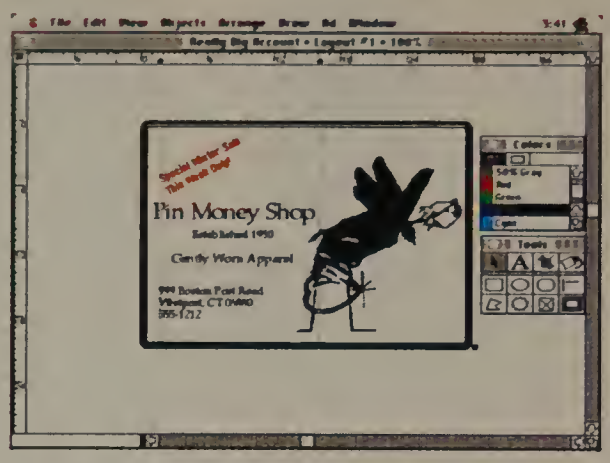
Many page-layout tools, such as PageMaker, QuarkXPress, and ReadySetGo, have improved the on-screen design and layout of multiple-page documents for publication; however, the impact has been less than spectacular on display advertisements.

One way to grab the reader's attention and interest is by employing unusual effects. Until Multi-Ad Creator came along, designers using the Mac for ad layout had to resort to one application for rotating text, another for drawing a starburst, and yet another for drawing a novelty border.

At first glance, Multi-Ad Creator resembles PageMaker or XPress, because it provides an electronic layout table for designing and arranging ads. Off to the sides of the ad board is space for keeping text and graphic elements that are not in use at the moment. Also on the desktop are two palettes: one containing a variety of drawing and manipulation tools, the other offering the means to assign color. To import text or graphics created outside Multi-Ad Creator, use the Place command. It isn't until you look closer that you begin to appreciate what sets Multi-Ad Creator apart from page-layout applications.

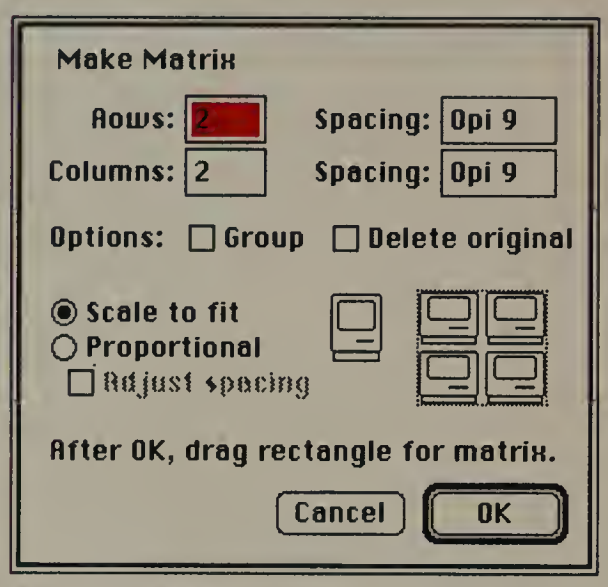
The Big Advantage

Multi-Ad Creator can automatically arrange a given amount of text to fill a block. It also lets you rotate text at any angle to create special effects, as well as wrap text outside, around, and inside an object such as a rectangle or circle. The program is no slouch when it comes to graphics effects, either. It has tools to draw polygons, irregular polygons, and starbursts, along with more standard shapes like circles, ovals, squares, lines, and rectangles. Once an object is drawn, you can double-click on it to edit line width and style. And you can change a shape's size by entering exact dimensions in a dialog box, or by eyeballing it in the Layout window. A status bar indicates the object's position on the page.



Colors and Tools Palette

In the Multi-Ad Creator's work environment the Colors and Tools palettes augment a strong set of menu commands. With the exception of some minor editing, Multi-Ad Creator generated this ad automatically.



Matrix Command.

Multi-Ad Creator's Matrix command takes any element in an ad and reproduces it a set number of times both horizontally and vertically with great precision.

Useful drop-shadow options allow you to choose which side you want the shadow on, as well as what color you want the shadow to be. If you are drawing framed rectangles or squares, you can use any of nearly 50 built-in custom frames. Although you can't edit or add to Multi-Ad Creator's library of frames, a frame editor will be standard in the near future.

Although Multi-Ad Creator has many special built-in tools and commands, you'll probably still need to import text and graphics for most ads. It can read formatted text files from Microsoft Word 3 and MacWrite, as well as Rich Text Format (RTF). It can also import MacPaint, RIFF, PICT, and EPS files along with several different TIFF formats, including TIFF files produced by MS-DOS scanners.

Getting the Lay of the Land

Perhaps the greatest joy in using Multi-Ad Creator comes when it's time to arrange an ad's text and graphics. The program includes several tools that make it easier to manipulate each element, or group of elements, within an ad. For example, the program can center objects both vertically and horizontally, as well as align a group of objects; it also provides rulers and guidelines with options for snapping objects to guidelines. Another helpful feature is the Matrix command, which allows you to duplicate one or more objects a specified number of times, and then paste them in any orientation. This feature is helpful if you are laying out something like multiple coupons on a page.

Multi-Ad Creator even has a Suggest feature that asks you to assign relative weights of importance to specific text and graphic elements, after which the program helps you examine your ad from different vantage points by automatically creating several alternative layouts. Multi-Ad Creator can also duplicate your ad in a separate window for experimental purposes, without affecting the original.

The Proof Is in the Pudding

Color-separated output is one of Multi-Ad Creator's strong points. You assign the color for an element by using one of five color-modeling methods: the standard Macintosh color wheel; a CMYK (cyan-magenta-yellow-black) or RGB (red-green-blue) percentage selection; a gray-scale percentage selection; or a set of editable patterns. You can also save an ad in PICT format for use in most other applications, including PageMaker and XPress.

Anyone who has used a desktop publishing, drawing, or other object-oriented Mac application will have little difficulty getting started with Multi-Ad Creator. Initially you can rely on its inter-

(continues)

Those beautiful ideas in your head need to go on the overhead just as beautifully, but your artistic ability or the guy in graphics just won't cooperate.

But the 4693DX Color Image Printer will. It uses a 300-dpi thermal-wax process in 16.7 million colors so images and type are bright, glossy, and very impressive.

And it prints on paper or transparencies for presentations, overheads and comps, with infinitely more fiscal responsibility than pricey outside services.

The Tektronix 4693DX. It's the perfect printer to have up your sleeve. Call for more information, 1-800-835-6100 Dept. 1C, or fax to (503) 682-3408.



Tektronix

The best and the brightest.

Magic without the markers.

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Circle 143 on reader service card

active HyperCard tutorial, or on the manual's tutorial files (supported by disk files). The program's 150-page manual is adequate but fails to sufficiently highlight some important points—like the Suggest feature. The manual also includes a user guide and reference section.

Overall, Multi-Ad Creator is a well-designed and well-executed application for creating display advertisements and other single-page layouts. It also offers many ⌘-key equivalents and keyboard shortcuts. Some of the ⌘-key shortcuts are very practical, such as using the Tab key to select successive elements within an ad, and using the numeric keypad to align items (rather than obscure the layout window with the Align dialog box).

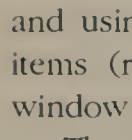
The downside is that Multi-Ad Creator cannot support multipage advertisements; in addition it costs more ($995) than any of the current crop of page-layout tools. Multi-Ad Services offers free software upgrades and technical support for one year. However, if you spend a lot of time designing or laying out display ads you should check out this richly featured layout program. Multi-Ad Creator might not eliminate the need for other applications to create an ad, but its intelligent design and variety of specialized tools are likely to reduce the time and tedium it takes to get an ad out the door.—*Keith Thompson*

See Where to Buy *or circle 803 on reader service card.*

WORDMAKER 1.0

Word Processor with Graphics Support

Pros: *Intuitive interface; fast; graphics can be placed anywhere on the page.* ***Cons:*** *No footnotes; no graphics in headers or footers; unpredictable Undo.*
Company: *New Horizons Software.*
Requires: *Mac Plus.* ***List price:*** *$124.95.*



Does the world really need another low-end Macintosh word processor? New Horizons Software appears to think so, for its WordMaker is positioned directly against Claris's MacWrite, T/Maker's WriteNow, and Microsoft Write in a market niche that seems to be filled with fine, capable products. WordMaker, though, brings a new mix of features to the utility word processor game that just might make it a contender.

Host of Features

I am a writer and a student, so I spend a lot of time with word processors. I have been using WriteNow almost exclusively. It is fast and responsive, with enough features and functionality to do 90 percent of what I need without forcing me to wade through a lot of page layout features I don't need.

I approached WordMaker with a bit of trepidation, but the transition proved easier than anticipated. It is a fast, solid, reliable program, remarkably clean and easy to learn, with much the same what-you-see-is-what-you-get feel as WriteNow or MacWrite. In addition, WordMaker has a host of nice little features: it can sort paragraphs alphabetically (in the background under MultiFinder); it supports many of the special keys on the Extended ADB Keyboard; it can pop up a menu bar anywhere on the screen with ⌘-click (a truly handy feature when using a large-screen display); it can change the case of selected text (for example, from upper case to lower case); it supports a nice set of shortcuts for cursor and selection movement (for example, triple-click to select a line, Option–double-click to select a paragraph); it can number pages with Roman numerals; and it has a spelling checker that can work interactively, check an entire document, or check any selection. The spelling checker operates in the background under MultiFinder.

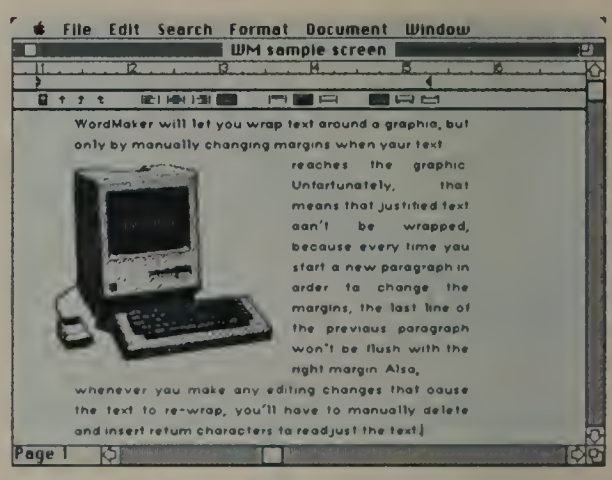
With WordMaker you can assign one of eight standard colors to text, and the program will display in color on a color monitor and print in color with a color printer (such as an ImageWriter II with a color ribbon). The last saved size and position of a document's window is restored whenever you open the document. Furthermore, the program supports up to ten open windows. WordMaker lets you save your own preferences for many of its defaults (interactive spelling on/off; size and position of a new document window; font, style, and size; and so on). There is a Document Information command that includes word, character, paragraph, and picture counts. WordMaker even sports a basic but functional merge-print capability for generating personalized form letters from mailing lists.

One significant feature of WordMaker is the way it handles graphics. MacWrite treats a pasted graphic as a whole paragraph; pasted graphics can't appear on the same line as editable text. WriteNow does it one better, with pasted graphics acting as single characters: you can mix text and graphics on a single line, but there is no way to flow text around a graphic. WordMaker allows text to flow around graphics, but there's a catch. Graphics are fully independent in WordMaker and can be dragged to any position on the page, even over editable text. To flow text around a graphic, you simply position the graphic on the page, then set the margins on the text adjacent to the graphic so that the text and graphic don't overlap. It sounds simple and powerful in theory, but the scheme forces you to add paragraph breaks wherever the margin settings need to change. As a result, you cannot wrap justified text around a graphic, and text that wraps around graphics or has embedded graphics must be manually adjusted whenever it is edited (see "Wrapping Text"). Still, WordMaker offers flexibility with graphics that MacWrite and WriteNow don't have.

Shortcomings

WordMaker does have some significant shortcomings. Graphics cannot be placed

(continues)



Wrapping Test
WordMaker lets you manually wrap text around a graphic, but only if the text isn't fully justified. Fully justified text will have unjustified lines where margins settings change around the picture.



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in headers or footers. If, for example, you want a logo to appear at the bottom of every page of a document you must manually place the graphic on each page. WordMaker doesn't support multiple columns (but then, none of the low-end products do a really good job with columns). Neither is there support for footnotes or endnotes. Setting the leading (the space between each line) is awkward if you need something other than single-, one-and-one-half-, or double-line spacing, because you have to go through a sequence of hierarchical menus to get to a dialog box and then type in a new leading value—cumbersome if you're playing with leading to make a format look good. It's also hard to predict exactly where pictures will end up after you make editing changes to a document, though in many cases WordMaker makes the appropriate adjustments.

My biggest pet peeve is the implementation of Undo. Though WordMaker supports Undo for most functions, some operations—such as Sort Paragraphs—cannot be undone. I found that I had to explore WordMaker's features with a bit more caution than I usually have when investigating new Macintosh applications.

WordMaker also lacks extensive import and export capability. In addition to WordMaker documents, it reads only MacWrite and text files. WordMaker can save files in WordMaker, MacWrite, and text format, and also as stationery. (When a stationery document is opened, a copy is created for editing; the original document is a template that is not altered.) If you have done extensive editing in WordMaker, for example, and decide that you need to present the final document using a page-layout program, you will have to export through MacWrite: some formatting information and all graphics will be lost.

WordMaker is fast, reliable, capable, and attractively priced. Particularly for general business users who anticipate the need for flexible handling of graphics but who won't require a full-blown page-layout program, WordMaker just might fit the bill.—*Ron Risley*

See Where to Buy or circle 871 on reader service card.

SHŌGUN 1.0

Interactive Fiction Game

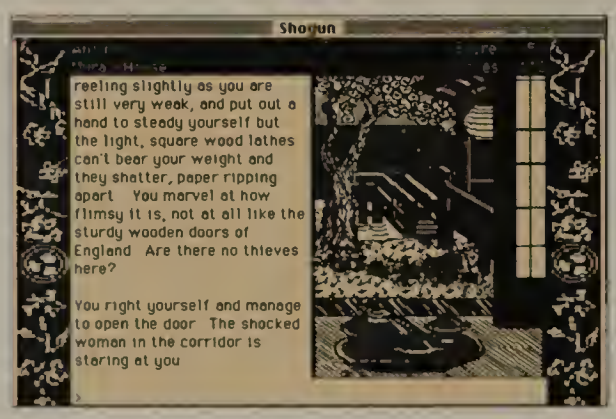
Pros: *Provides a feel for the culture, turmoil, and excitement of seventeenth-century Japan; excellent graphics.* ***Cons:*** *Those who've read the book on which game is based may find it too easy to win; user interface could be improved.* ***Company:*** *Infocom.* ***Requires:*** *512K.* ***List price:*** *$59.95.*

After viewing the 15-hour television miniseries "Shōgun," and reading James Clavell's book, it was with some reservations that I began playing Shōgun. I was afraid it might trivialize what had been for me a fascinating story about seventeenth-century Japan. I'm happy to report that the game, which closely follows the book's story line, provides a pleasant recollection of that experience. While the game lacks Clavell's colorful prose, it does provide tantalizing tidbits of facts that contrast the clean, orderly, and obedient Japanese world to the dirty, anarchistic, superstitious Europe of the seventeenth century.

It's Almost as Good as the Book

The story takes place in 1600. Spain and Portugal, then the strongest imperialist powers, are being challenged in their colonial activities by two upstart Protestant countries: England and Holland. Pilot-Major John Blackthorne is on a mission to navigate the orient and create maps of the region for the Protestant countries.

As Blackthorne, you quickly become embroiled in the struggle of two competing daimyos, or lords, as each side tries to use you to its advantage. To survive, you must play a subtle game of diplomacy while observing the behavior considered correct in structured samurai society. A faux pas such as speaking out of turn or neglecting to bow at the correct time can bring on your daimyo's wrath and result in your speedy decapitation. But being too passive or subservient could render you ineffective in achieving your goals.



Beautiful Graphics

Shōgun is filled with beautiful images. This is Blackthorne's first view of Japan. Knocked unconscious during a storm at sea, he wakes up in a small, immaculate Japanese house. After eating and dressing, he looks out the paper door to an orderly Japanese garden.

Something for Everyone

While there is plenty of action in the game—storms at sea, land battles—for the most part, you win by subtle maneuvers that often require understanding the psychology of the characters. The story progresses in a series of short scenes, most of which are introduced with a graphic. Your goal is to acquire as many points as possible in each scene, while avoiding actions that could lead to your death. Even if you do not die, you cannot move on if you reach the end of a scene without acquiring a certain number of points. If you die or lose a scene, you can restart the game from the beginning or from any saved position.

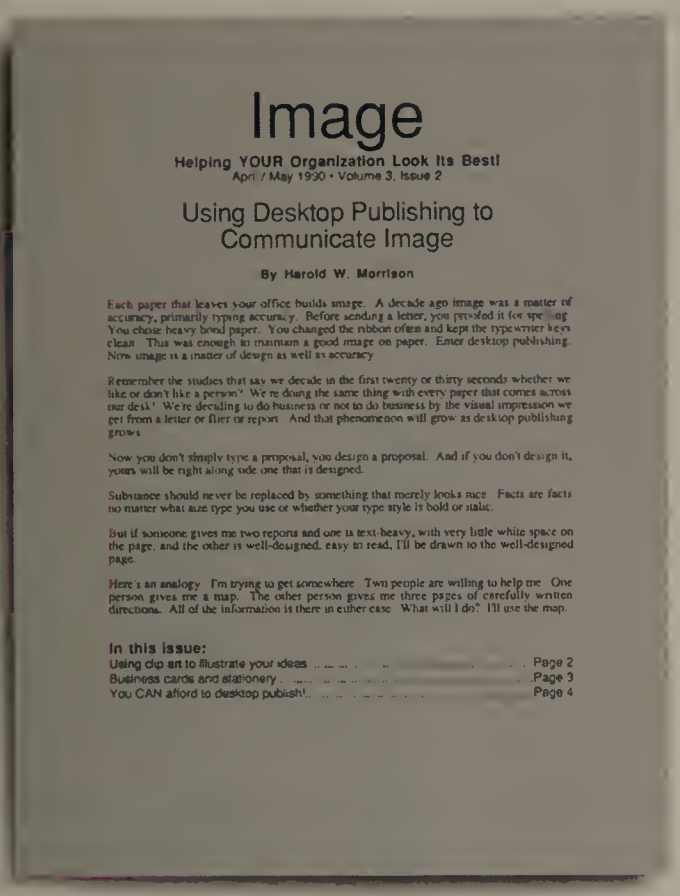
While the game is not copy protected, it requires that you refer to a paper map that comes with the package. When Rodrigues, the captain of a slave ship, interrogates Blackthorne to determine if he is a pirate, you find the proper responses by studying the map. You cannot continue with the game unless you have the correct answer.

This game provides a more interesting narrative than any other game I've played. There are frequent interludes in which no user response is required, and many times your actions are practically ignored while a scene is played out. It's these times of user inactivity when the flavor of the book comes through strongly. For example, in one scene we see a Jesuit complain about Japanese cleanliness—proclaiming that it is only necessary to bathe when you get married and when you die.

(continues)

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April / May 1990 • Volume 3, Issue 2

Using Desktop Publishing to Communicate Image

By Harold W. Morrison

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Substance should never be replaced by something that merely looks nice. Facts are facts no matter what size type you use or whether your type style is bold or italic.

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Here's an analogy. I'm trying to get somewhere. Two people are willing to help me. One person gives me a map. The other person gives me three pages of carefully written directions. All of the information is there in either case. What will I do? I'll use the map.

In this issue:
Using clip art to illustrate your ideas ..... Page 2
Business cards and stationery ..... Page 3
You CAN afford to desktop publish! ..... Page 4

Your word processor alone.

Soon After.



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Each paper that leaves your desk builds image. A decade ago image was a matter of accuracy, primarily typing accuracy. Before sending a letter, you proofed it for spelling. You chose heavy bond paper. You changed the ribbon often and kept the typewriter keys clean. This was enough to maintain a good image on paper. Enter desktop publishing. Now image is a matter of design as well as accuracy.

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Here's an analogy. I'm trying to get somewhere. Two people are willing to help me. One person gives me a map. The other person gives me several pages of carefully written directions. All of the same information is there in both cases. What will I do? I'll use the map.

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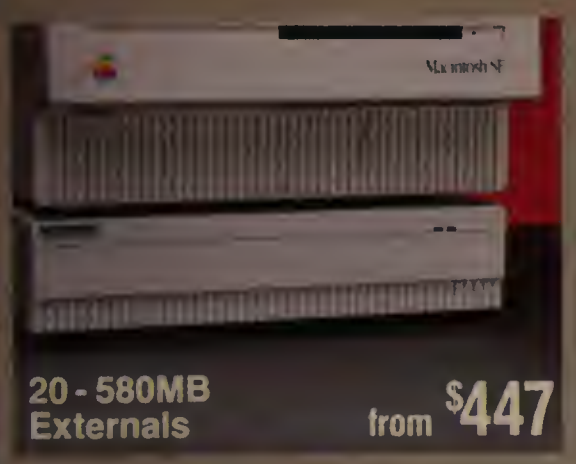
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The biggest problem Clavell fans might have with the game is that it follows the book so closely that winning might be too easy. Even though I read the book over a decade ago, I often found myself remembering scenes and knowing exactly what to do.

The only other problem with the game—like all Infocom games—is you can't use the mouse to advantage. If you type a sentence and realize you made a mistake in the first word, you can't move the mouse to that word but have to backspace, deleting the entire sentence. You also can't copy and paste text from previous sentences.

Despite these drawbacks, the game has a great deal to recommend it. Shōgun offers something for everyone: James Clavell fans, history buffs, adventure lovers, and anyone who appreciates a game that is based on realistic events.

—Lawrence Stevens

See Where to Buy *or circle 835 on reader service card.*

APPMAKER 1.0

Software Development Tool

Pros: *Quickly builds user interface; automatically generates application source code for MPW C 3.0, MPW Pascal 2.0.2 or 3.0, Think C 3.01, and Think Pascal 1.11 or 2.0; includes a useful library of support routines.* ***Cons:*** *Substandard documentation; awkward user interface; requires considerable knowledge of Macintosh programming.* ***Company:*** *Bowers Development.* ***Requires:*** *Mac Plus.* ***List price:*** *$295.*



When was the last time you actually wrote a Macintosh program from scratch? If you're like most programmers, probably not recently. Most likely you borrowed heavily from your earlier programs, fitting in new windows and buttons and changing the code to fit the needs of the new application. After all, about a quarter of the code for all Macintosh applications is remarkably similar. The main event loop that handles the menus and mouse clicks for a word processor is nearly identical to the main event loop for a paint program.

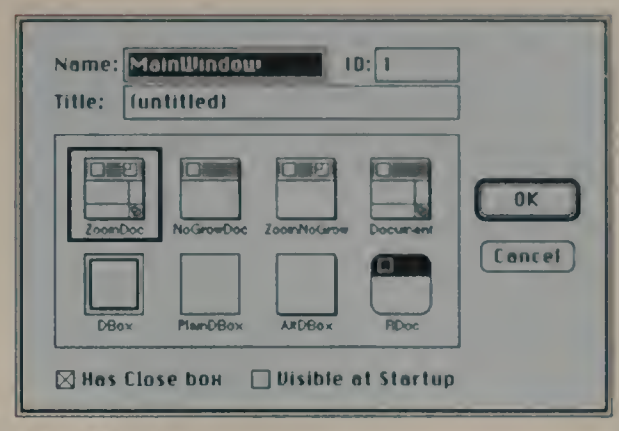
A number of software developers' tools are now available that provide a library of generic functions, or automatically generate a skeleton program onto which you can build. MacApp, from Apple, is a monumental library of programming subroutines; Prototyper, from Smethers-Barnes, generates a skeleton program based on a prototype of menus, windows, and dialog boxes that you design. Now Bowers Development Corporation has added AppMaker to the programmer's software tools.

Customizable Code in a Minute

To create a program, you first run AppMaker and create menus, windows, and dialog boxes right on the computer screen. You can select buttons, scroll bars, editable text fields, and a variety of other controls from a palette and place them where you want them to appear. Once you're satisfied with the way your windows look, AppMaker generates a skeleton program for you. Depending on the complexity of your design, AppMaker takes about a minute to write a program in either C or Pascal that you can then compile under MPW or Think.

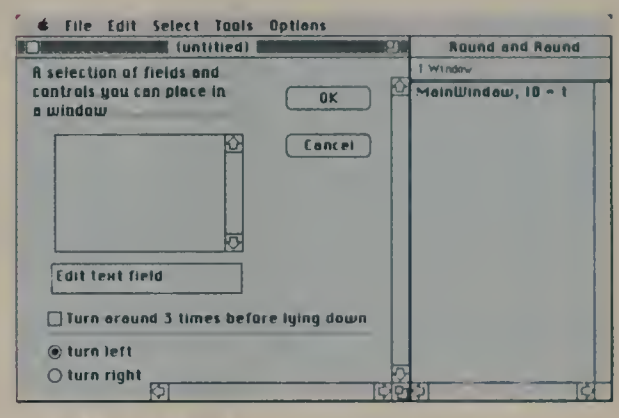
The visible components of the user interface for a Macintosh program—the menus, windows, buttons, and scroll bars—are called resources and live in the resource fork of an application, separate from the program code. This separation of visible components from the program itself makes it easy to change the messages, titles, or window layouts without actually changing the program code. The document file, created by AppMaker when you create a prototype for your program, is a collection of resources used by your program to build the screen display. Thus you could use AppMaker to modify the visible resources of any application—to change the messages or the placement of text fields or buttons, for example.

The program that AppMaker writes for you only handles the user interface items such as menus, scroll bars, windows, and buttons. You have to write the functioning parts—such as the procedures that draw pictures in windows or do database searches—and add them to the skeleton AppMaker created. But given the substantial amount of code it takes to handle mouse clicks, window dragging, and menu selections, having nearly a quarter of the work done for you automatically is nothing to sniff at.



New Boundaries

When creating a new window, you can select from a variety of possible types.



Contents and Fields

In addition to the standard controls and fields shown here, you can also place user-defined controls such as thermometers, dials, and pictures. AppMaker does not, however, provide any means for you to create the icons or pictures; you must create them with other software, such as ResEdit, and import them.

How Do You Use This Thing?

Creating the prototype windows, menus, and dialog boxes for your program with AppMaker is fairly simple. You ask for a new window from a selection of window types, and then fill it with buttons, text fields, and other controls from a pull-down menu. To add menu items, you type the names of new items into a window containing a set of pull-down menus. Generally, everything works quite logically.

Unfortunately, the logic is not always apparent, especially when you're first learning how to use AppMaker. For example, you can't create a pop-up menu by simply selecting the pop-up menu tool

(continues)



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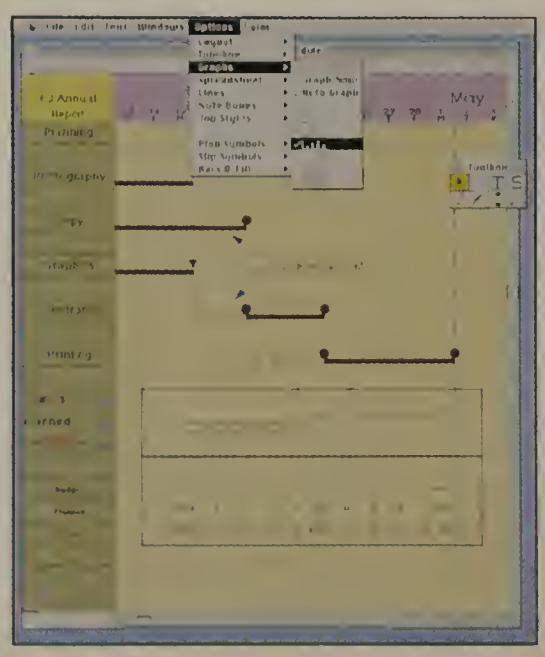
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from the palette. You must first create a special menu bar, then select the pop-up menu tool, and then select the previously created menu. It makes sense once you've done it a few times, but until then, it's not at all apparent what's going on. This is when you turn to the manual for help.

Macintosh users turn to manuals only as a last resort. AppMaker's manual consists of a lengthy and boring tutorial called Quick Tour, followed by another lengthy and boring tutorial called Creating and Editing the User Interface, both consisting of simple, numbered, step-by-step instructions with no explanations for what you're doing or why you're doing it. Somewhere in here you'll find out what steps you need to follow to create that pop-up menu.

Love Them Modules

While the prototype-building part of AppMaker is rather clumsy, the source code it generates for your program's skeleton is quite elegant. A program created by AppMaker can open multiple copies of a window, and the way it's structured makes it easy for you to open multiple files. The code is well organized, compact, and without redundancies, so it's easy to follow when you're trying to figure out where to add your subroutines. It is also MultiFinder-aware, so the program you build allows other programs to run in the background.

In addition to the generated source code, AppMaker provides a library of subroutines, most of which are used by the program skeleton that it generates. Together the library and generated program code provide a good example of Macintosh programming techniques. There are some problems with version 1.0, however. For example, it frequently creates constants with identical names that you have to correct by hand. The problems are minor, however, and easy to work around.

Hate That Manual

Macintosh programmers, unlike Macintosh users, live by their books. Again, the reference section of AppMaker's manual is only marginally useful. Although the material is technically correct, it is far too brief and cryptic. In particular, the descriptions of the library subroutines are too brief to be of any use. If you want to know how the program AppMaker created for you works, you'll have to print out and read the source code.

Is It Worthwhile?

For $295, you might expect a solid, well-documented product. Although it shows a great deal of potential, AppMaker version 1.0 falls far short of that ideal. The user interface to the program could be improved to make it easier to understand and work with, and the manual needs to be rewritten. For a serious programmer or developer, however, AppMaker might save a couple of weeks of work and provide a solid foundation on which to build your program.—*Ken Takara*

See Where to Buy *or circle 712 on reader service card.*

SERVICE INDUSTRY ACCOUNTING

Specialized Accounting Program

Pros: *Powerful and versatile.* ***Cons:*** *Potential problems with Australian terminology for U.S. users.* ***Company:*** *Sybiz Editions from Brown-Wagh Publishing.* ***Requires:*** *Mac Plus; second disk drive; hard disk recommended.* ***List price:*** *$395.*



Service Industry Accounting (SIA) is intended for small businesses that bid for jobs and charge for time and materials. It targets those with specialized needs not met by general accounting programs such as Computer Associates' Simply Accounting, Monogram's Business Sense, or Check-Mark's MultiLedger.

Like the general accounting programs, SIA offers general ledger, accounts receivable, accounts payable, and inventory modules. But its best feature is its job-costing book, a unique feature among the programs I've seen. Simply Accounting, a similarly priced program that also has job costing, handles this segment by assigning job codes to your regular entries, so you can identify transactions connected to specific jobs. SIA, in contrast, separates jobs into a ledger entirely its own.

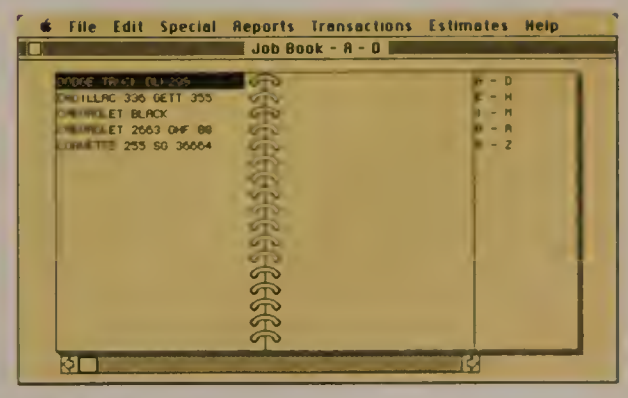
Job Costing

The Job Book allows you to prepare and print estimates for specific jobs, enter all the actual costs for a given job (both inventory parts and labor), and then prepare your customer billing invoices—and all without leaving the ledger. The program offers four customer billing formats ranging from a standard invoice form to a letter-style invoice.

The program's Job Estimate Card requires the same information you'd use to fill out a job estimate on paper. To create an estimate, you click on the customer name from the customer file (or create a new customer), and fill in your labor or parts costs by clicking on the name from an employee name file or the part name from your inventory file. You then enter the number of employee hours or inventory parts, and Service Industry Accounting calculates the cost based on the hourly charges you entered for the worker or the retail price you entered for the parts. These figures may, of course, be changed if you desire. The number of employees and inventory parts are limited only by the size of your disk, but if you have over 2000 parts, you will need more than the basic 1MB of memory required.

Once you have entered your estimate data, the record is stored permanently under the job number you assign (see "The Book of Jobs"). If you're successful in getting the job, you calculate your costs, and print the customer invoice from

(continues)



The Book of Jobs

You enter estimates and actual invoices in the Job Book by clicking on the customer name, or adding a new customer name to the book. When you click on the alphabetical tabs on the right, Service Industry Accounting brings you to that alphabetical section in the book. You may add pages to the book any time you need to.



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the actual job record. Service Industry Accounting stores both your estimate and the actual job information permanently until you close your books for the period.

Receivables and Payables

Accounts Receivable, located in the Sales Book is also simple and direct. You create invoices directly on screen, clicking items from your inventory file, while the program calculates prices (which you can override) based on the quantities you have entered. Invoices may be printed individually, or printed in batches. You enter payments under the open invoice method, so you can track full and partial payments. The inventory file is also automatically updated as you enter the items on your invoices.

Accounts Payable, in the Purchase Book, allows you to track payables (also on the open invoice method). Service Industry Accounting lets you write checks to vendors directly from the program, or you can enter individual checks. All activity from the Job, Sales, and Purchase books is automatically posted to the General Ledger immediately after entry. Unlike many general accounting programs, SIA does not contain a payroll segment, so you'll have to enter this data manually in the general ledger. In all modules, inventory is updated as you work, and is valued using the weighted average cost method.

Service Industry Accounting offers a good range of reports that should serve the needs of Mac users in small businesses, including a sales journal; customer history; job cards (estimates and actuals); labor journal; job details and summaries; an inventory list; a reorder list; the usual A/R and A/P data (including aged reports); along with the usual G/L reports like income statement, balance sheet, general journal, and chart of accounts. You may also print mailing labels for your customers and vendors. You cannot create custom reports, but SIA provides an export utility that dumps data into a text file for use in spreadsheets and word processors. The program does not import data.

Like other accounting programs that work in real time (immediate posting to the general ledger rather than batch processing), SIA's audit trail will be effective as long as you print out *all* the necessary reports, as specified in the documentation, prior to closing each period. The program also offers two levels of passwords, for file security.

What's That, Mate?

A potential problem for North American users is SIA's terminology (the program originated in Australia); it surfaces frequently in the menus and documentation. The customer is referred to in the accounts receivable section as the debtor, and the vendor in the accounts payable book is called the creditor. And inventory is called a stocktake. This may be a quaint experience for users who are familiar with accounting terms, but for novices who are just entering the world of cash flow and income statements, these terms could be confusing.

The way the program handles debits and credits to the general ledger may also cause problems. Most accounting programs enter debits and credits on the same screen. Service Industry Accounting requires that you enter general ledger debits and credits on separate screens, making it much harder to see unbalanced entries. The program will check for unbalanced entries, but only when you finish entering your data, at which point you will have to find any errors and correct them.

To Buy or Not to Buy

Service Industry Accounting has much to recommend it to a small business. Its Job Book is both powerful and easy to use, and should be a major buying attraction to businesses that estimate and bid on a job-by-job basis. The program's Sales (A/R), Purchases (A/P), and Inventory segments are as competent as those offered by most general accounting programs. The documentation is also adequate for learning the program, and a set of sample company data is provided for the tutorial process. Service Industry Accounting's best attribute, however, is its Job Book, and if your business is job-oriented, you should certainly look at SIA.

—Alan L. Slay

See Where to Buy or circle 833 on reader service card.

READ-IT 2.1

Trainable OCR Program

Pros: *Very accurate after training; responsive, well-designed user interface; includes type tables for many common sources.* ***Cons:*** *Mediocre support for columns and other complex formats.* ***Company:*** *Olduvai Corporation.* ***Requires:*** *Mac Plus; hard disk.* ***List price:*** *$495.*

TEXTPERT 3.0

Trainable OCR Program

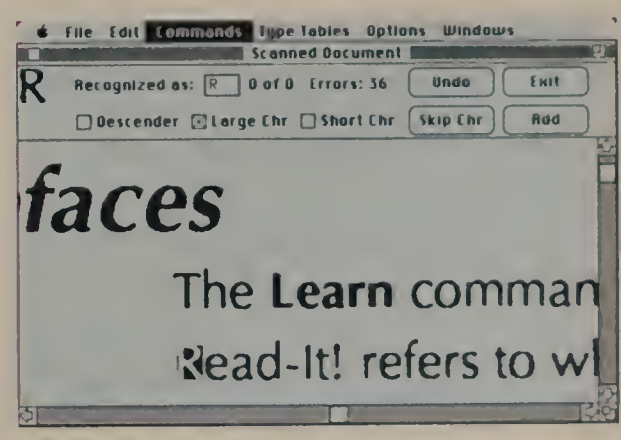
Pros: *Very accurate after training, and acceptably accurate without training for many common typefaces; automatically defines text areas to be read, even in documents with complex formats.* ***Cons:*** *Slow at scanning, translating, scrolling, and screen update.* ***Company:*** *CTA.* ***Requires:*** *Mac Plus; hard disk.* ***List price:*** *$995.*



With much more success than first-generation OCR (optical character recognition) packages, Olduvai's Read-It and CTA's TextPert let you teach computers how to read new typefaces, thereby allowing you to import text from any printed source into Mac applications.

Both programs work by combing through scanned documents to isolate dot patterns that constitute the scanned image of each character. This pattern is compared to hundreds or thousands of ex-

(continues)



Learning to Read-It

In Read-It's training window, the character image currently being learned—in this case the R in "Read-It,"—is shown by itself at the top left of the screen and in context in the lower window.

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Macworld / *September 1988*

"**MultiLedger** is ideal for the small business. It's easy to set up and use and has an amazing set of accounting features when compared to other programs that cost more and don't offer much more power."
MACazine / *March 1989*

"I don't know of any other Mac accounting software which contains so many features and modules for the price."
Computers in Accounting / *January 1989*

"A welcome and impressive bonus is the **Payroll** program which can be linked to **MultiLedger**.... **MultiLedger** and **Payroll** are a bargain for companies that don't need a networked system."
MacUser / *April 1989*

"Our favorite package was **MultiLedger**.... it's the most elegant, usable and Mac-like of all the packages we reviewed.... CheckMark offers unlimited free telephone support to all users. This policy would lead to bankruptcy if the program were as confusing as others."
The Macintosh Buyer's Guide / *Spring 1989*

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amples stored in type tables. When the match is close enough, the corresponding text character goes into an output file, and it's on to the next group of dots.

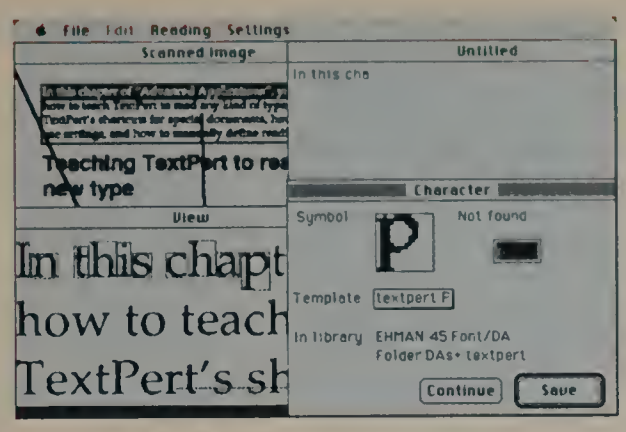
Teaching a trainable OCR program to recognize a new typeface means constructing a new type table. In this process you're shown the dotty image of each scanned character one at a time, and you're asked to type in the correct keyboard character or confirm the program's own guess. Once you've recorded several samples for each character in the font—a process that takes 30 to 60 minutes—you're in business. After training, both TextPert and Read-It are amazingly accurate, correctly identifying 95 percent or more of the characters they encounter.

However, even with improved software accuracy and the flexibility of today's hardware, OCR still isn't fast enough to have a tremendous advantage over typing in text. You should test the waters very carefully before investing lots of money in an OCR system.

Read-It

Olduvai's Read-It sports a clean interface and responsive feel that make it a pleasure to work with. To get you started, the program comes with a good range of prefabricated type tables, including tables for the LaserWriter and ImageWriter fonts, as well as common typefaces from newspapers and magazines such as the *Wall Street Journal, Newsweek,* and even *Byte.* While the canned tables I tried performed fairly well, variations in scanning conditions require that you further refine the tables for your own system for best results. In general, Read-It's character-recognition algorithms could be more flexible: they stumble over size and style variations.

Read-It's typeface training process goes smoothly and quickly, however. The program fills most of the screen with an in-context blowup of the scanned character image being processed (see "Learning to Read-It"). As soon as you confirm the text translation for the image, the program moves on instantly to the next character in the document, allowing you to plow through the trainer page as fast as you can read and click. It's also easy to edit the resulting type table to remove mistakes.



Training TextPert
While you train TextPert, you can see a close-up of the scanned character in context, a window containing the scanned image at normal magnification, the output text file so far, as well as the training window itself. In the Scanned image window, the thick black lines indicate reading order for the text blocks.

Documents with complex formats—columnar magazine layouts, for example—pose a challenge to OCR technology, since the flow of text may follow a tortuous path across the page. Read-It handles the problem by letting you define specific areas of the scanned image to be read. The program translates these blocks in the order in which you defined them, ignoring everything else on the page. You can then save the pattern of blocks, without contents, as templates to apply to other pages. This approach has its drawbacks—it takes time to define the blocks manually, and you must position each page exactly as you did the first one—but it does work.

TextPert

TextPert's best feature is a powerful built-in type table that needs no training to chew through almost any typeface. Untrained, it can even read fancy display type and produce recognizable output. It also handles more conventional italic and boldface typefaces in a range of sizes with greater accuracy than does Read-It. TextPert's ability to scan text from many sources without training is a tremendous plus.

Another TextPert strength is that it automatically recognizes columns and skips over large type and graphics. Of course, you're also free to define your own blocks and reading order.

TextPert's training function lets you easily customize the program to improve accuracy over the built-in type tables alone, and the program has sophisticated features for refining the type tables you generate (see "Training TextPert"). On the negative side, though, the training process is considerably slower than the comparable routine in Read-It, with an annoying delay in screen redraw. The program suffered from sluggishness, at least on my Mac Plus, in most other areas as well. For some reason, scanning a page takes several times as long as in Read-It. Worse, TextPert also falls behind in reading documents. In my formal tests, it required 9 minutes to convert the same TIFF file that occupied Read-It for about 6½. What's more, menus open with languid hesitation, scanned images scroll lethargically, and the cursor seems to be straining against some unseen resistance as it moves through the output text.

Shared Features

In addition to being trainable, Read-It and TextPert share several other features. Both include drivers for many common scanners (I used a Hewlett-Packard ScanJet Plus for my tests), so you can scan documents without having to exit either program. Both packages also include simple text editors that let you edit OCR output without having to move to a separate word processor.

A Close Call

Since TextPert and Read-It produce comparably accurate translations when properly trained, the choice between them depends on other factors. TextPert costs considerably more, but it's the closest thing yet to universal OCR, and if you want to scan documents from many different sources it's clearly superior. If you scan from a few sources repeatedly, however, and can invest in training time, the contest is a toss-up. TextPert's ability to define reading areas automatically is a big plus when you're dealing with columnar material, and it may save enough time and aggravation to make up for the program's otherwise slower performance. Read-It, however, wins the raw speed race and is clearly the better choice for scanning books and other simple-format materials.—*Steve Cummings*

See Where to Buy or circle 828 (Read-It) and 854 (TextPert) on reader service card.

RENDEZVOUS 2.36

Electronic Appointment Diary

Pros: *Easy input; search capability, visual and audible appointment reminders.* ***Cons:*** *Limited control over display and output.* ***Company:*** *PMC Telesystems.* ***Requires:*** *512KE; System 6.0.* ***List price:*** *Version 2.5 $200.*

CALENDAR CREATOR 1.0

Custom Calendar Developer

Pros: *Creates nine different types of calendars; can combine different lists of events in one calendar.* ***Cons:*** *Does not have appointment reminders; input of single event cumbersome.* ***Company:*** *Power Up Software Corporation.* ***Requires:*** *Mac 512KE.* ***List price:*** *$59.95.*



Both Rendezvous and Calendar Creator can be used to keep on top of appointments and tasks, but there are important differences. Rendezvous provides the immediacy of a desk diary that lets you easily keep track of the myriad meetings and assignments that come up during the day. Calendar Creator, on the other hand, is best for creating clear and attractive calendars that help you plan the more routine and repetitive activities.

Rendezvous

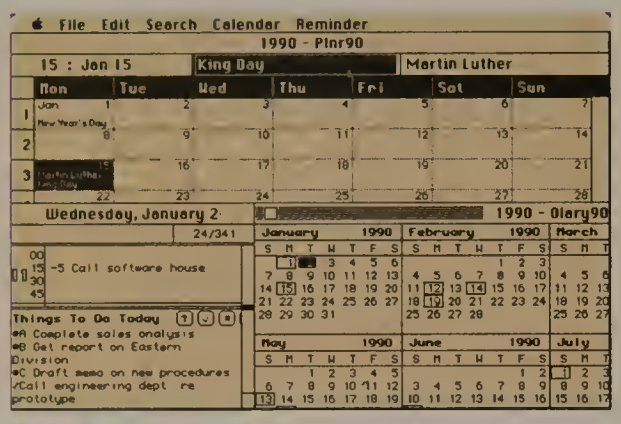
The Day Page has two main fields: an appointment log (divided into 15-minute segments) and a Things To Do Today section. Both fields are scrollable, and a split-screen bar allows you to change the relative size of each field.

After you've typed an entry into the appointment log, you can have the program display the appointment information (accompanied by a beep or melody) across the top of the Mac screen. Additionally, data typed in the line at the top of the Day Page flashes on the screen when you start up the Mac on the appropriate day.

Besides Day Pages, Rendezvous also has a Year Planner, Year Calendar, and Month Calendar (see "Rendezvous's Calendars," Month Calendar is not shown). In the Year Calendar, which displays a complete year at one time, you can access Day Pages by clicking on individual dates. The Year Planner displays ten weeks at a time and allows you to place short messages at each date. The Month Calendar has a scrollable field for each date and automatically posts Things To Do Today items from the Day Pages.

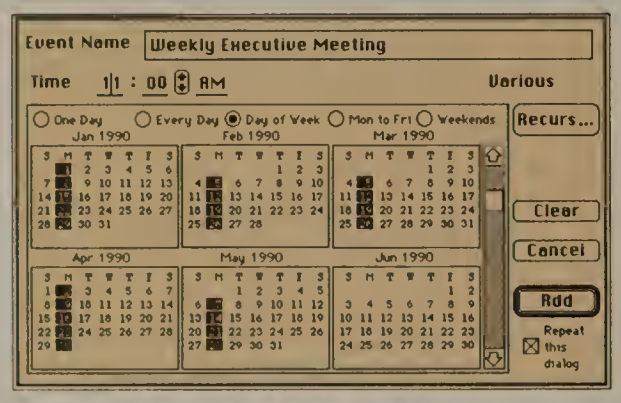
Rendezvous also has a Search function that helps keep track of your next meeting with the boss, or your last visit to a particular client.

Rendezvous's version 2.36 automates many functions that you had to do manually in previous incarnations. For example,



Rendezvous's Calendars

The Year Planner displays 10 weeks on the screen at a time. You can enter data up to two lines of 15 characters each in each cell. Each date that has an entry in the Year Planner is shown with a rectangle in the Year Calendar (bottom right). While the Day Page (bottom left) is divided into 15-minute segments, you can have the alarm signal at any time by using a minus or plus sign.



Adding Events in Calendar Creator

To enter a single event, type the event name at the top of the dialog box, select the Add button, type in the time, and in the calendar click on the day the event is to take place. To specify floating dates (say the third Tuesday of every month) use the Recurs button. Rendezvous has an analogous feature called Repeat, but that only allows you to repeat an event every set number of minutes, every week, or every month.

the Things To Do Today field now has a check box to indicate that a task has been accomplished and three priority buttons to assign an A, B, or C rank to each task. The Sort button arranges the list in the following order only: A tasks, B tasks, C tasks, tasks with no letter designation, and finally tasks with check marks. The program can also automatically forward all unchecked items from previous Day Pages.

The biggest limitation is Rendezvous's display and print capabilities. The program doesn't allow you to select the size or style of font, or choose the size of the printed calendar. And your choice of calendars is limited: one-day-per-page daily, monthly, and yearly.

Calendar Creator

Calendar Creator gives you a choice of nine calendars. The Daily and Two Day calendars have designated sections for each hour of the day and a space at the bottom for tasks not related to a specific time, much like Rendezvous's Day Pages. The Weekly-normal, Two-Weekly, Monthly, and Six-Weekly calendars have small spaces (without designated time intervals) under each date for appointment entries. The Weekly-schedule calendar is similar to the Weekly-normal except that it has designated time intervals. The Wide calendar is a planner-type chart that has the months along the left side and the dates horizontal. And the Yearly calendar provides a full year of dates on one page with limited space for events.

You can choose the type of calendar you want in Calendar Creator, as well as control the layout. For example, you can choose the font size and style; change the day on which the week begins; enlarge or remove weekend boxes; and display or hide a tiny monthly calendar at the bottom of the Daily and Two-Day pages.

Unlike Rendezvous—where you type events directly into the calendar—Calendar Creator consists of a Calendar document, which contains the calendar format, and an Event List document, which contains a list of events. While this method makes data entry more difficult than in Rendezvous, it does offer more control over the calendar. Whenever an Event List

(continues)

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is opened, the items on that list appear on the open calendar. When an Event List is closed, the items disappear from the calendar. Because you can have any number of Event Lists open at one time, your calendar can contain any combination of events. Rendezvous allows you to have different Planners and Diaries, but they cannot be combined.

Although it takes longer to enter single events into Calendar Creator than into Rendezvous (see "Adding Events in Calendar Creator"), it often takes less time to enter repetitive events. If you are constantly adding new appointments and tasks, you'll like the direct data input of Rendezvous and you'll also benefit from Rendezvous's alarm feature. On the other hand, if most of your appointments are long-term or cyclical, and quick data entry is not a major concern, Calendar Creator gives you much better output.

—Lawrence Stevens

See Where to Buy or circle 829 (Rendezvous) or 723 (Calendar Creator) on reader service card.

NETWORK DISKFIT 1.5

Backup Utility for Networks

Pros: *Preserves AppleShare folder privileges; can create image backup; can save backup commands as SmartSets; recognizes tapes, disk cartridges, or floppies for multivolume backup; MultiFinder compatible.* ***Cons:*** *No log of backed-up folders and files for printing or perusal; selected files can be restored only by dragging on the desktop, not via DiskFit program.* ***Company:*** *SuperMac Technology.* ***Requires:*** *Mac 512K.* ***List price:*** *$395.*

When AppleShare first arrived on the Macintosh scene, its use of a folder-based protection scheme caused some consternation among writers of backup software. SuperMac Technology was the first to develop a product, Network DiskFit, that allows users to retain their folder's access privileges during backup.

Building on Older Brother

Many of Network DiskFit's features are the same as those found in the DiskFit software (see "A Clean Interface"). For instance, you can either perform a mirror image backup of one hard disk to another, or a file-by-file backup. Image backups are useful if you're planning to transfer data to a different hard disk. But if you need to reduce fragmentation on a server you should use the file-by-file strategy. Network DiskFit also recovers space on backup disks when you perform incremental backups and replace old version files with newer ones.

Unfortunately, Network DiskFit retains some of DiskFit's bad habits, for example it doesn't let you select specific files for backup. Its newer competitors, HFS Backup and Redux, do allow selected file backups and full-disk and incremental backups.

However, you can selectively restore files and folders from a full or incremental backup. You can copy any file from a backup set to another disk on the desktop simply by dragging its icon.

Network DiskFit splits large files to fit on your backup media (floppies, for instance). You can use the Join option in Network DiskFit to fit the parts of any large file back together again on a hard disk. (Some users complain that they have not been able to join files, but I haven't run into any problems.)

SmartSets are the basic means of setting up a backup strategy. You can create a SmartSet to back up only documents, applications, and System files, or only files that you own, which is important for AppleShare servers (see "Just What Do You Want?"). Once you've created a SmartSet, Network DiskFit can use that series of selected options over and over again to perform subsequent backups.

Are You Protected?

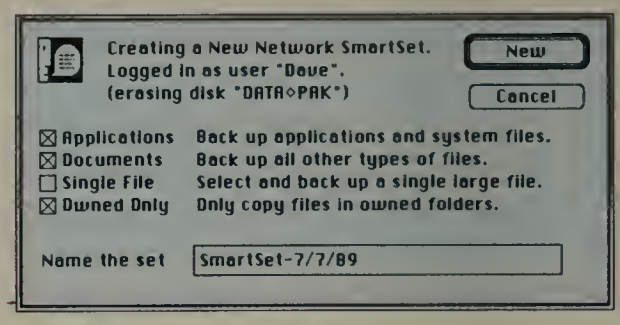
One of Network DiskFit's major advantages is its ability to retain a user's access privileges for AppleShare folders. The server administrator can back up the entire server, once it's been disconnected from all users and shut down. Although disconnecting the server is the best way to insure that no one changes a file as it's being backed up, other safety strategies should be possible with AppleShare 2.0.1.

You do have to exercise some care if you're backing up the AppleShare server



A Clean Interface

Network DiskFit's interface is very simple and easy to understand. First, you select the volume to be backed up, then you select the destination volume for the backup set.



Just What Do You Want?

When you're dealing with a server, you can choose to back up only documents, or applications and System files. That can save you space, since applications aren't likely to change from one backup to another. Selecting Owned Only means that you back up files that you alone are responsible for.

and expect to retain each folder's access privileges. Privilege information is retained and restored during a volume restore only if you use a complete SmartSet, in other words, you select documents, applications, and System files from the Options list. If you use an incomplete SmartSet, you'll have to reassign each restored folder's access privileges.

Network DiskFit isn't restricted to use with AppleShare volumes; for example, it's good for backing up TOPS volumes. You can use either a SmartSet or Network DiskFit's disk-duplication option. Because TOPS treats MS-DOS directories as old-style MFS directories rather than HFS directories, you should be aware that you're backing up only one directory; subdirectories must be backed up separately.

Saving Graces

Although Network DiskFit doesn't fit all of my backup styles (such as project-related backups), it's easy to use, both for net-

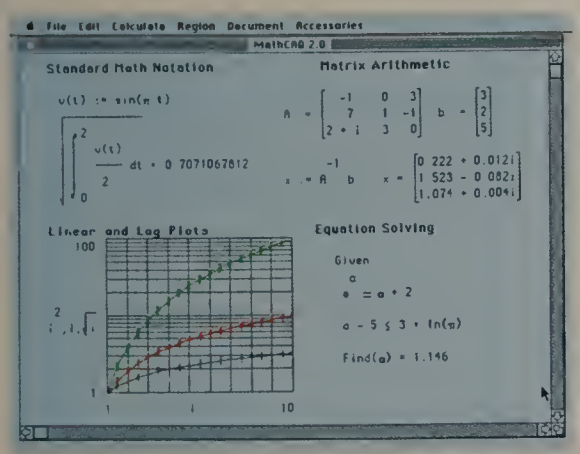
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worked servers and regular hard disks. It supports floppies, tapes, and removable cartridges, leaving the choice of backup media to you. Now that HFS Backup and Redux also save AppleShare access privileges, and Network DiskFit still lacks the ability to save a detailed log of backed-up files, I'll probably continue to use Network DiskFit's competitors.—*Dave Kosiur*

See Where to Buy for contact information.

RICOH PC LASER 6000/PS

300-dpi PostScript Laser Printer

Pros: *Fast; solid blocks; HP LaserJet II emulation; economical to operate.* ***Cons:*** *Replacing toner can be messy; support personnel new to the Mac.* ***Company:*** *Ricoh Corporation.* ***Requires:*** *Mac 512KE.* ***List price:*** *$4495.*

The whole idea behind PostScript is that output from one PostScript device will match the output from any other PostScript device. Barring gross differences like varying resolution or page size, there is little to distinguish a page printed by one PostScript printer from the same page printed by another. However, there are differences in the features, quality, and support offered by various PostScript products. The Ricoh PC Laser 6000/PS differs from other PostScript printers in all three areas (see "Paging All Printers," October 1989).

The 6000/PS is similar in configuration to a LaserWriter IINT. It comes with the same 35 typefaces (from 11 families) as Apple's printers, plus 2MB of RAM (upgradable to 4MB for $1145) and a 68000 processor. Its processor runs faster than the LaserWriter's: 16.75MHz versus the LaserWriter's 11.2MHz clock. The improvement in speed is noticeable. The 6000/PS uses version 50.5 of Adobe's PostScript interpreter; LaserWriters use an older version.

No Canons, Please

Unlike the LaserWriter and many other PostScript printers, the Ricoh printer does not use the Canon printer engine with its single cartridge that replaces toner and photosensitive element together. Instead, Ricoh uses its own 6-page-per-minute LP1060 engine—the same one used in printers like the GCC PLP. The Ricoh engine features separate replaceable units for the toner and the photosensitive element. It isn't as convenient as the single-cartridge approach, but you don't have to replace the expensive photosensitive element every time you run out of toner. If you can put up with a slightly more complex and messier installation and service routine (made worse by the diminutive drawings in the manual), you could possibly save some money, although calculating per-sheet costs using list prices and claimed lifetimes for disposable elements doesn't indicate a great cost difference. At present, cartridge refills are not available for the Ricoh printer. The PC Laser 6000/PS does produce excellent, high-contrast print, even on graphics with large areas of pure black.

A potentially valuable feature for the increasing number of sites with both Macintosh and MS-DOS machines is the 6000/PS's emulation of the HP LaserJet II series of printers. Since many MS-DOS applications still don't work well with PostScript output devices, this could prove convenient. You can leave AppleTalk and the DOS machines connected and switch from one to the other using the PC Laser 6000/PS's alphanumeric front-panel status display. The printer even accepts HP LaserJet font cartridges.

The front-panel display is a nice touch. It continuously displays the printer status, and you can set the printer's operating mode (serial, parallel, or AppleTalk interface; PostScript or HP emulation; no test page; and so on) through an intuitive sequence of menus. Unfortunately, you have to practically get down on your knees to read the front panel. And the legend that explains operation of the control panel is on the top of the printer near the back. When you're positioned to read the front panel, you cannot read the legend.



MARK JOHANN

Ricoh PC Laser 6000/PS

The printer normally stacks output pages facedown, so that pages printed in normal order will be properly collated. With the addition of a $20 tray, the printer will also output faceup for those who prefer the reverse collating sequence of the original LaserWriter and LaserWriter Plus. The faceup option (which doesn't really require the tray, if you don't mind having your pages dumped on the floor) provides a straighter paper path, so that labels and heavier paper feed more evenly. There's also a 250-sheet input hopper (available for $495).

Support?

Support for the Macintosh interface is adequate, largely because connecting to a Mac is so easy. Still, I had to figure out some operations—like how to properly feed envelopes—purely by trial and error.

A new Mac user might find Ricoh's instructions for installing screen fonts a bit terse. Following PostScript printer vendors' unfortunate trend, no PostScript screen fonts are supplied with the machine; users are expected to get them from Apple or Adobe. As with other non-Apple laser printers, the 6000/PS ignores the smoothing option in the Page Setup dialog box, but a patch, available through user groups and online services like CompuServe's MAUG forum, can correct that problem. The Ricoh support staff is apparently new to the Macintosh market. They were friendly and attentive, but it took them several days to answer some questions. I expect they'll get better as they gain experience.

Overall I give the Ricoh PC Laser 6000/PS high marks. It's a clean, speedy (for 68000 PostScript), well-featured implementation of a 300-dpi PostScript output device, with better-than-average print quality. In mixed DOS/Macintosh environments the LaserJet II emulation can be a real lifesaver, and this printer currently lists for hundreds less than an Apple-labeled LaserWriter.—*Ron Risley*

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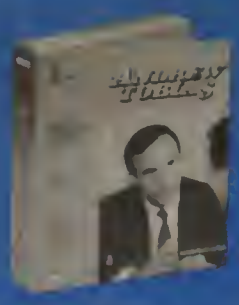
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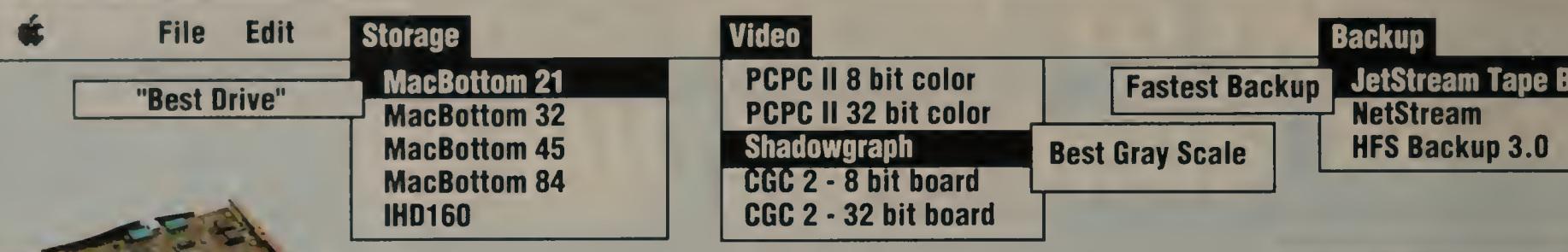
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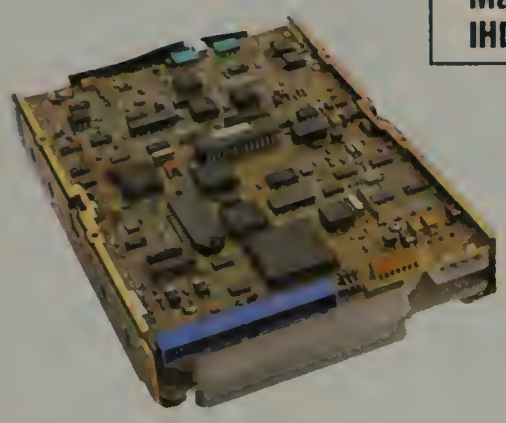
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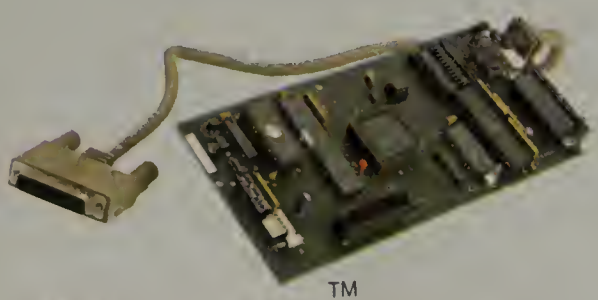
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WINDOW SHOPPING

by Lawrence Stevens

This month I look at four HyperCard stacks—two that animate children's stories, one for creating scholarly reports, and one to help administer a school. Also, I review a program that creates astrology charts.

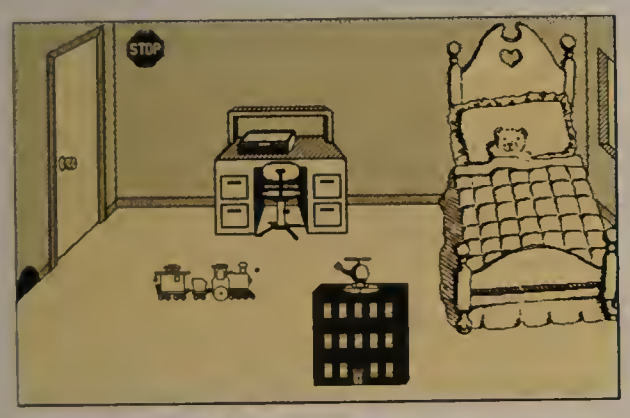

RON CHAN

A Country Christmas
My First Book of Poetry
and The Dream Called Storm

These nicely animated HyperCard-based stories for children from B&B Soundworks have as fine graphics and diverse sound effects as any stack I have seen. A Country Christmas, based on traditional Christmas poems and carols, succeeds better than the other stories, which are at times based on amateurish verse.

A Country Christmas ($34.95) displays fields, a barn, and rooms in a country house. By clicking on screen elements such as doors, windows, and staircases, you "walk" into other scenes. Many of the Christmas objects in each screen are actually HyperCard buttons that when clicked create an animation with sound effects (see "A Screen Full of Buttons").

You can decorate the snowman, or select a tree to chop down and decorate with a variety of ornaments. And—the best part, I think—at the bottom of each carol are a piano, a violin, and a harpsichord. If you click on any one of them, the program plays the carol with the selected instrument.



A Screen Full of Buttons

Most of the objects here are actually HyperCard buttons that trigger animations. Clicking on the toy train causes a mouse to scamper out of a hole, jump on the train, and drive it around the room. Click on the helicopter, and controls appear that allow you to guide its flight. And when you click on the typewriter, that lets you draw on the screen using knobs, buttons, and dials.

My First Book of Poetry and The Dream Called Storm (packaged together for $29.95) work the same as A Country Christmas. The animations and illustrations are just as appealing, but unfortunately, the poems aren't as interesting as in A Country Christmas. For example, The Dream Called Storm is based on the following poem: Upon a giant mountainside/Lay a little purple form/When came upon us/A terrible, dreadful storm.

My First Book of Poetry contains five poems. Some of the words are actually buttons that trigger an animation. For example, in the poem A Crow Named Fred is the stanza: An old black crow/Named Fred/Flew through the air/But fell on his head." If you click the word Flew, a crow caws and flits around the screen.

Both packages will keep your child fascinated for about as long as most good toys (the company does not recommend age level, but my guess would be from 5 to 12). But A Country Christmas, with its recipes, prose, tunes, and instructions for making ornaments, is a great holiday present with the potential of entertaining even after the children grow tired of mousing around the Mac.

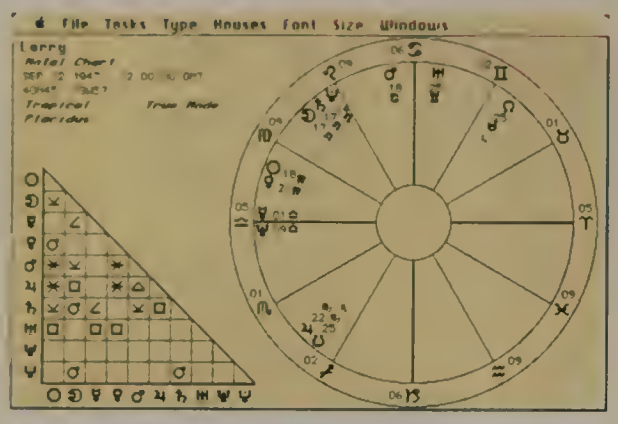
Chart Interpreter 1.2

If you're satisfied with your Sunday newspaper supplement or a book like *Linda Goodman's Sun Signs* to provide astrological interpretations, you'll probably find this program overwhelming. On the other hand, if you've been thinking about going to a professional astrologer to have your chart drawn and interpreted, or if you *are* a professional astrologer and want to cut five or six hours off the time it takes to create a report, Chart Interpreter, from Time Cycles Research, might be just what you need.

You input the day, time, and location of birth into an Info Card. If you were born in almost any North or South American or European time zone (including past ones such as Eastern War Time), the program will automatically translate that into Greenwich Mean Time; if you were born in Asia, Africa, or Australia, you translate for yourself. And if you were born in any one of the 500 U.S. cities in the program's database, Chart Interpreter will input the longitude and latitude; otherwise you'll need to do it yourself.

You can choose which astrology type to use: tropical or sidereal (each is based on a different theory of where the zodiac

(continues)



Astrology Chart

Chart Interpreter generates a personality profile after you input natal data. If you don't understand the chart, don't worry—the program also generates a 15-page interpretation.

begins). You can also use any of the nine house systems, such as Placidus, Koch, or Equal. All I know about these options is that the program defaults to tropical and Placidus because, the manual says, they are the most commonly used.

Once all the information has been entered into the Info Card, the program draws a chart and produces a 15-page interpretation (see "Astrology Chart").

At $199.50, Chart Interpreter is for the serious amateur or professional astrologer. It is limited to personality interpretation and does not evaluate compatibility between two people or predict what your day will be like. But it is extremely comprehensive in what it does.

The Phrase Thesaurus

The Phrase Thesaurus from L'Intelligence Active Software ($69) is a HyperCard stack that walks you through the process of creating a scholarly report or paper. The program's developers did linguistical analysis on professional reports and found that most of them can be broken down into a hierarchy of sections, topics, and commonly used phrases. The program leads you to create a report section by section, to create the sections topic by topic, and to create the topics phrase by phrase.

You begin at the Menu Card, selecting one of the following sections: Introductions, Materials, Methods, Discussions, or Abstracts. Each section card contains a number of subordinate cards, or topics. For example, the Discussions section contains five topics: Comments, Results, Comparison, Reasons, and Conclusions. Each topic card allows you to build a phrase by choosing subphrases or words. For example, the Results card contains the following phrase broken into three parts: "There were/marked/changes in." By clicking any of the three sections, you can change the words (see "Crafting a Report Phrase by Phrase"). You can change *marked* to *clear, major, obvious, or significant*. When you complete the phrase and click the Copy to Draft button, the phrase will be pasted on a card in your draft report. The final draft can be printed right from HyperCard, or you can copy and paste it into your word processing program.

Anyone who has created a lengthy report knows that the biggest effort is organizing the mountain of information to be included. The Phrase Thesaurus does a good job of automating that task.

EPS School Administrator's Assistant

EPS (Educational Productivity Stacks) School Administrator's Assistant from Chancery Software ($79) is a HyperCard stack for administering an elementary or secondary school. Like business organizers such as Focal Point, EPS School Administrator's Assistant contains modules that cover most aspects of an administrator's job. It also has buttons for launching other applications you have.

The most-used parts are the Diary, Week, and Month cards. You can copy text to or from any of the calendar cards. The Diary card has an Action Items section with check mark buttons allowing you to denote completed tasks. Option-clicking the Action Items button brings up a dialog box that lets you move any unchecked items to a selected date. While these features are helpful, they fall a bit short of other organizer programs where data from day pages can automatically be distributed to weekly and monthly pages, and to-do items can be forwarded to the next day.



Crafting a Report Phrase by Phrase

Like most topic cards in The Phrase Thesaurus, Advantages—a subcard under the Materials section—contains two phrase sets. When you first click on a phrase box, alternate words appear about one every second. Clicking on the box a second time stops the flicker of words. In this example, An additional may be changed to A recent, The main, A major, and so on.

The Directory stack provides an address card for each name, and when used with a modem can automatically keep track of the date, time, and length of telephone calls. You can dial a phone number by selecting the telephone icon. Also, while working in any of the program modules you can have your Mac locate and dial any telephone number by clicking on a name. You can type Notes about the call (and password-protect them if you choose), or select standard notes such as Left message. (The program comes with six standard messages, but you can add your own.) You can also enter the date and time of an appointment on the Directory card and have the program transfer the information to the appropriate Diary page.

The Staff stack is a database for tracking such information as job history, education, certification, medical history, and performance appraisal. The Appraisal card comes with a list of eight appraisal indicators, such as Assigns homework, Spends most of school day on academics, and Creates a climate in which students can succeed. You can add or delete indicators.

The Crisis stack keeps lists of students along with emergency information. It also logs any emergency calls to parents. The Incident stack (its icon is a bomb) tracks students' poor-conduct incidents, along with calls to parents and suspension information. The Bus stack helps you schedule transportation.

EPS School Administrator's Assistant is a well-integrated, all-encompassing program. It allows customization, has a nice graphical interface, and is inexpensive. Even if you use only a few of the modules, you will get your money's worth. ◘

See Where to Buy or circle 732 (A Country Christmas), 805 (My First Book of Poetry), 726 (Chart Interpreter), 816 (The Phrase Thesaurus), or 747 (EPS School Administrator Assistant) on reader service card.



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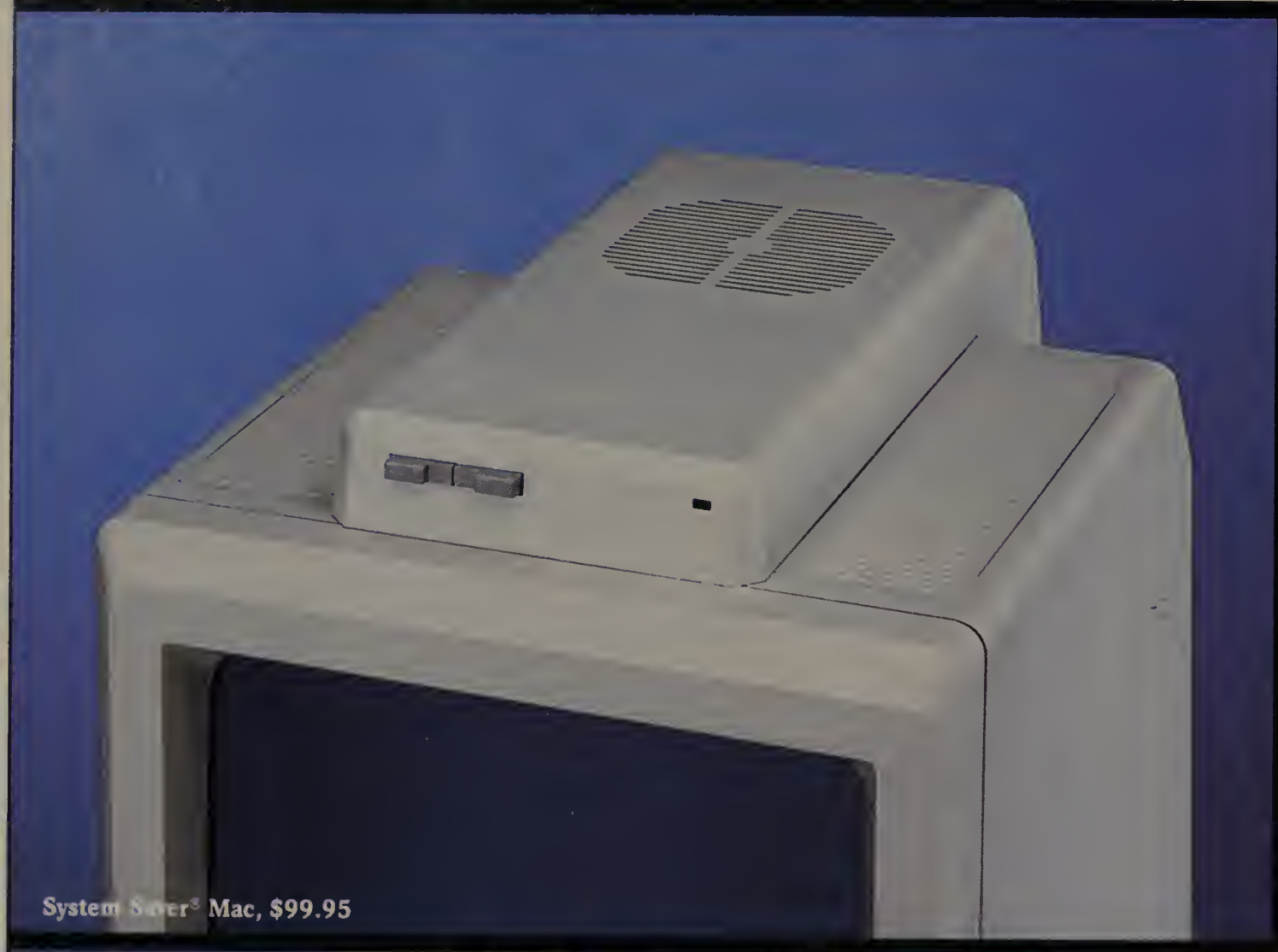
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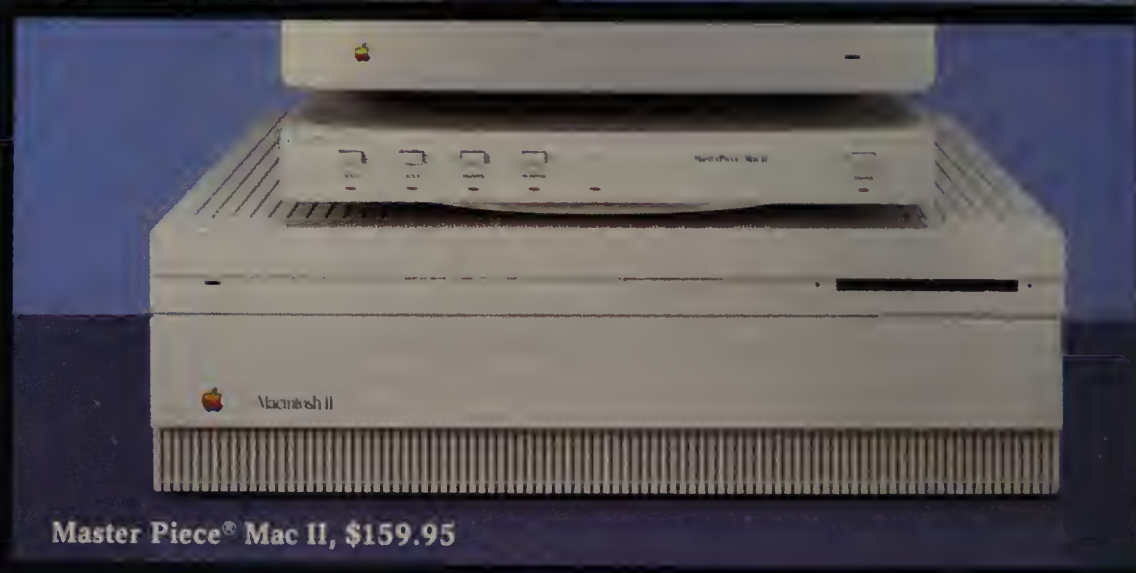
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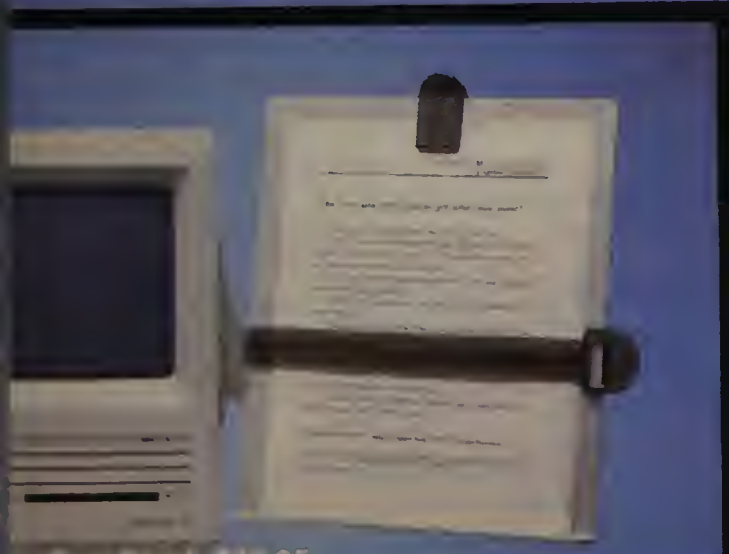
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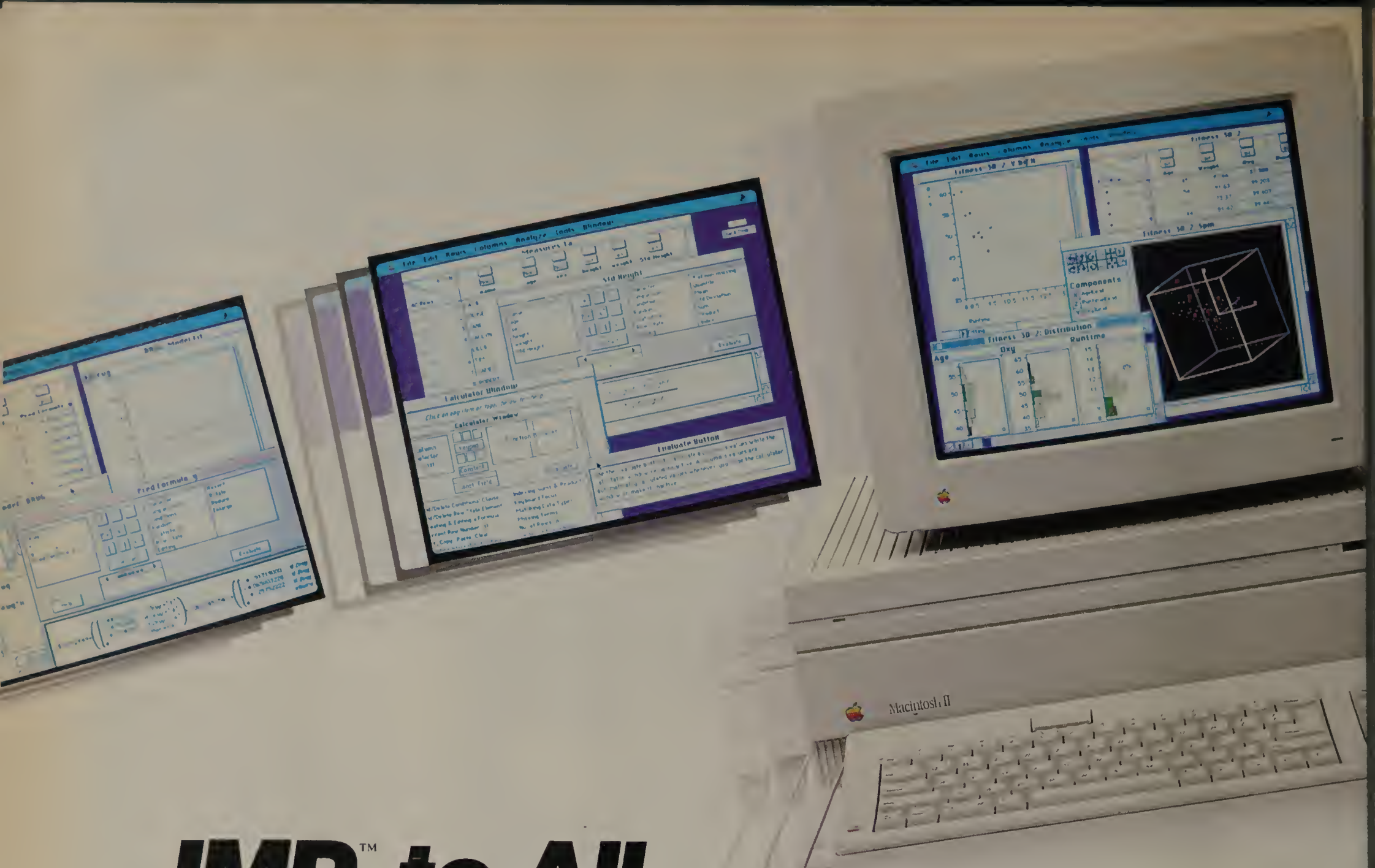
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NEW PRODUCTS

Edited by
Mary Margaret Lewis

This section covers Macintosh products formally announced but not yet evaluated by Macworld. All prices are suggested retail. Please call vendors for information on availability.

HARDWARE

Array Scanner-One

Electronic still camera that can be used on the desktop to create color separations and to perform other image-acquisition and processing functions. Can be used as a copy-stand camera, tripod-mounted studio camera, and slide or film scanner. Requires IEEE 488 port. $20,000. Array Technologies, 415/633-3000.



Array Scanner-One

ColorPage

Full page color-display system for the Mac II family. Includes monitor and video controller. Displays at a resolution of 72 dots per inch. $2095. E-Machines, 503/646-6699.

Designer Series Pen Plotters

Family of large-format pen plotters, available in two sizes to handle media from 8½ by 11 inches up to 36 by 48 inches. Comes with multiple-pen option. $2695 to $2995; multipen feature $450. Zericon, 415/490-8380.



LabelWriter Printer

LabelWriter Printer

Miniature printer occupies just a 3-by-6-inch spot on a desktop and prints 1-by-2½-inch labels suitable for envelopes, file folders, floppy disks, bar codes, and so on. Printer is driven by a desk accessory that lets you clip text from a document and reformat it before printing. DA manages its own mailing list and gives user access to mailing lists created by a variety of word processors. $249.95. Costar, 203/661-9700.

MacinStor Erasable Optical

Family of erasable optical drives with average seek time of 35 milliseconds using Maxtor's Tahiti I drive. Has capacity of 1 gigabyte per cartridge. $7995; 650MB cartridge $295; 1GB cartridge $395. Storage Dimensions, 408/879-0300.

MacLan 4 Media Filter Kit

Kit that connects Mac II computers to token ring local area networks over unshielded twisted pair wiring. Patch panel connection system allows computers to be connected through standard RJ-11 modular phone jack for portability. $55. Nevada Western, 408/734-2700.

MacPro Keyboard

Keyboard designed for use with SE, SE/30, II, IIx, and IIcx. Plugs in to the ADB connector. Provides large L-shaped Return key and large Delete key, and has Control, Option, and Command keys on both sides of the space bar. Bundled with Tempo II macro package. $197. Key-tronic, 509/928-8000.



MacRascol Print

MacRascol Print

Color printer controller that works with Lasergraphics' rasterizing software and SCSI interface. Print controller is an independent external device that plugs in to the Macintosh SCSI port and connects to a variety of color printers. $1995. Lasergraphics, 714/660-9497.

MaxStream Model 2200

8mm data-cassette drive with storage capacity of up to 2.2 gigabytes and data-transfer rate of up to 14MB per minute. Archive's proprietary universal tape format allows data transfers between Macs and IBM PCs equipped with ArchiveVP Model 2200 systems. $6695. Archive Corporation, 800/237-4929.



Maynstream Tape Backup Drive

Maynstream 60, 150, and 2200HS Drives

Portable tape backup systems store, respectively, 60MB, 150MB, or 2.2GB of data on 8mm cassettes. Systems use helical scan technology and have effective backup speed of 5MB per minute with transfer rate of up to 14MB per minute. 60MB $1595; 150MB $1895; 2.2GB $7495. Maynard Electronics, 407/331-6402.

Microtech 68030 Board

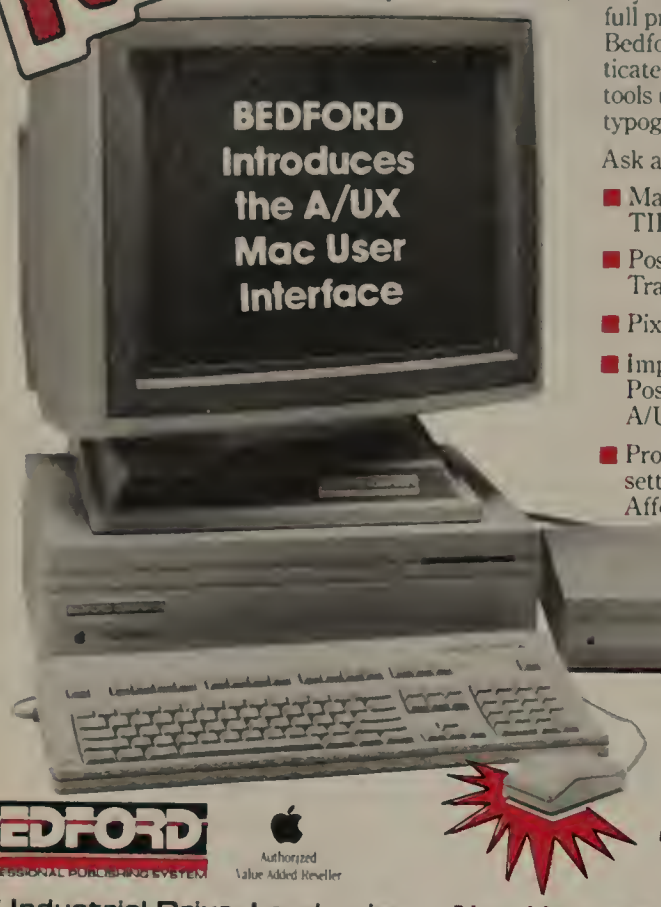
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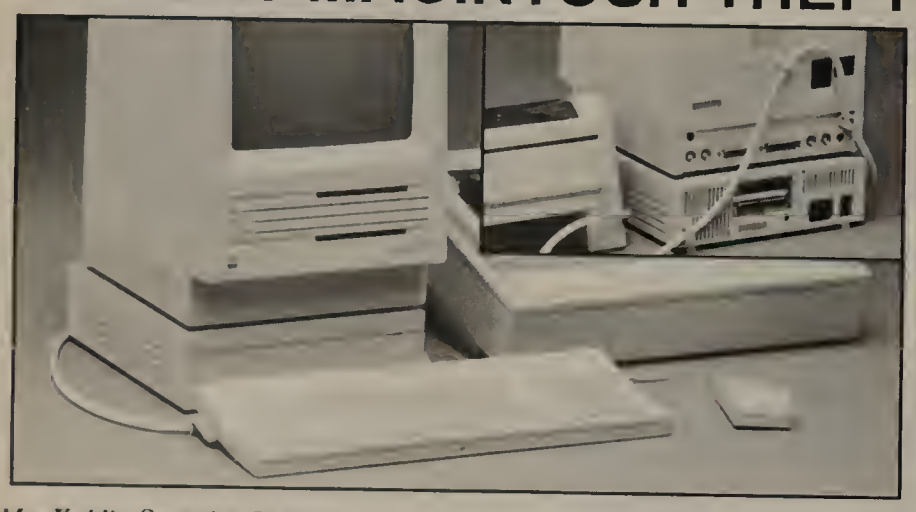
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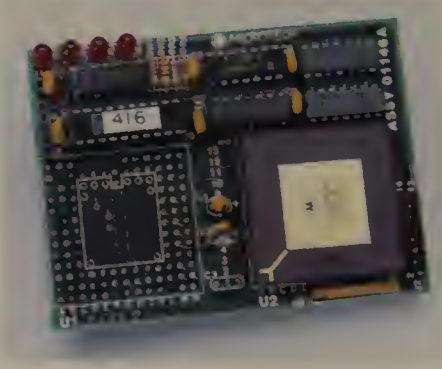
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Microtech 68030 Board

neers who require access to features specific to the Motorola MC68030. Contains on-board PMMU, test points, and indicators for real-time software debugging. $796. Microtech, 203/488-7744 or 800/325-1895.

NuBus BusTrak

NuBus analyzer designed to support the parallel processing industry. Works with any system using NuBus architecture and communicates with standard ASCII terminals. $2495. Applied Physics, 317/497-1718.

NuSuper

Coprocessor system for the Macintosh that uses RISC technology and has 6MB of memory-ready cache and direct access to 32MB of DRAM on the NuBus. Code to run on the NuSuper under the Macintosh operating system can be compiled to Mac, PC, Sun, or VAX hosts. Under $2800. Yarc Systems, 818/889-4388.

Nutmeg 30/2 Card

Card that drives Apple Two-Page Monochrome Monitor and Apple Macintosh Portrait Display without requiring special software. Card senses whether a monitor is attached, determines what the monitor is, and displays data accordingly. $699. Nutmeg Systems, 203/966-3226.

Odyssey 2000

Kit to make a portable Mac designed for the presentation market. Contains a removable Kodak DataShow screen and accommodates internal hard disk. Compatible with all Macintosh software. Requires Mac keyboard, hard disk, mouse, and system board. $2195. Odyssey Systems, 208/362-0023.



Odyssey 2000

Organizer for LaserWriter II

Pedestal base for the LaserWriter II printer that raises the printer to desktop height. Provides built-in storage for all LaserWriter supplies, such as 20MB hard disk used as a font server, extra paper trays, up to 2000 sheets of 8 ½-by-14-inch paper, and a toner cartridge. Has casters for portability. $299. Costar, 203/661-9700.

PageView

Monochrome display, full-page system for the Mac II that provides single-page desktop publishing and word processing capabilities. Has 15-inch flat-screen monitor with dark glass, 97Hz refresh rate, and antiglare filter. $1399. Sigma Designs, 415/770-0100.

Radius QuickColor

Graphics accelerator for the Mac II that executes graphics

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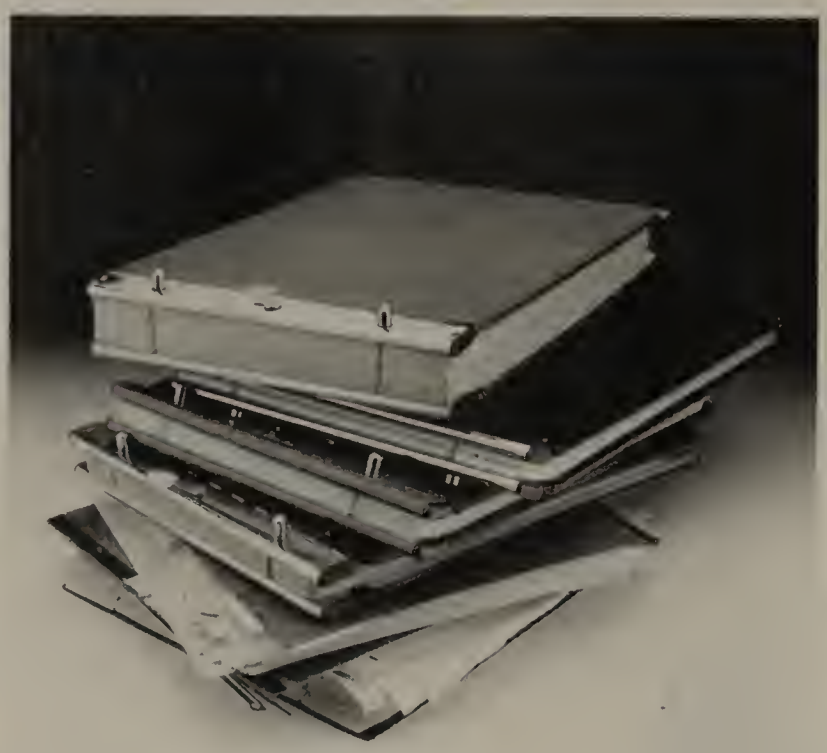
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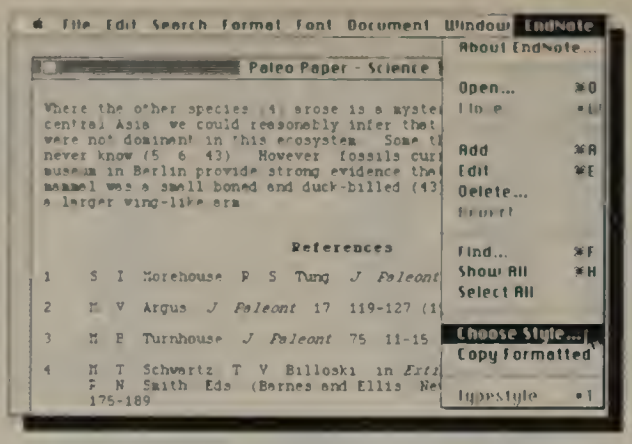
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RP88 Coprocessor Board

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Designed for SCSI random access devices to facilitate early testing and detection of production problems in asynchronous SCSI targets. Tests for margins, timings, and error conditions. DSC-302A $1960; DSC-302B $2450. Ancot, 415/363-0667.

Sonar 600S Optical Subsystem

Erasable optical 600MB subsystem. External unit consists of Sony optical drive and includes one Sony cartridge, two SCSI cables, Dolphin-installed software, and a manual. Has universal power supply. ISO and ANSI compatible. $5995. Dolphin Systems Technology, 714/558-3220.

Super Digitizer Tablet

Family of digitizing tablets that can be used with pressure-sensitive stylus to vary line width, airbrush density, and color gradation. Comes in sizes ranging from 12 by 12 inches and up. Prices range from $895 to $1295 for desktop digitizers and $125 for pressure-sensitive stylus. Wacom, 201/265-4226.



Output from Super Digitizer Tablet

Tecmar Helical System THS-2200

SCSI interface, 8mm helical-scan tape subsystem is compatible with IBM 286/386 and PS/2 computers, and all Macs. Designed for tape storage for high-capacity data backup and archival applications. Interface kits are available for THS-2200 compatibility with individual system architectures. $6495; Interface kits $195 to $695. Tecmar, 216/349-0600.

Twin Axcess for the Mac II

Mac II board that has direct twinax attachment. Allows file transfer between a Mac II and an IBM AS/400 or System/3X. Supports up to seven concurrent host sessions. $995. KMW Systems, 800/531-5167.

(continues)

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MacTable design patent pending. MacTable is a registered trademark of Scandinavian Computer Furniture Inc. Apple is a trademark of and Macintosh is a trademark licensed to Apple Computer Inc. Prices and designs subject to change without notice.

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TX SE/30 Display System

Large-screen color display system for the Mac SE/30, with 16-inch display and 72Hz refresh rate. Screen is coated to reduce glare. $4495. E-Machines, 503/646-6699.

Voyager 030/33

Accelerator card that plugs in to the main logic board of the Macintosh II or IIx and increases its performance by from 200 to 400 percent. Card is compatible with third-party peripherals such as hard disks, as well as with A/UX and other major software. $5195. Total Systems, 800/874-2288.



Xapshot

WM-S070 Disk Drive

Stand-alone 5 1/4-inch write-once optical disk drive that works with several computer platforms. Supports ISO-standard cartridge, media, and format for interchangeability. $3595. Toshiba, 714/583-3108.

Xapshot

Camera that uses 2-inch video floppies to record analog video still images that can be converted to digital using a standard video digitizing board or device and saved as TIFF, PICT, or other standard image files on the Mac. Designed for use in desktop publishing, image databases, desktop presentations, and similar applications. $999. Canon USA, 516/933-6300.

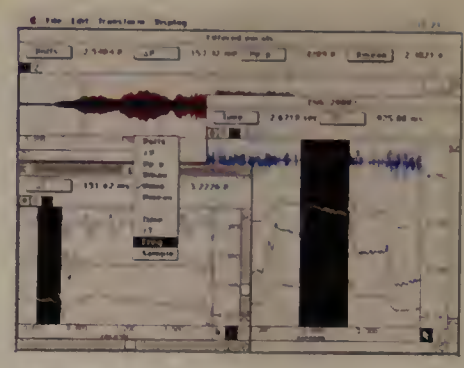
SOFTWARE

AcqKnowledge

Waveform data analysis software designed to help the Mac work like a digital signal processing workstation. Uses interactive waveform display with cut, copy, and paste functions. Includes measurement and transformation, filtering and spectral analysis, and printing and file handling functions. 1MB min. memory. $495. Biopac, 805/967-6615.

Aperture

Visual information management system designed to help architects, engineers, space planners, and facilities managers build relational databases for information related to their drawings. Has report generator and online technical drawing capabilities. 1MB min. memory. $795.



AcqKnowledge

Aperture Technologies, 203/975-7587.

Artcare

System for managing art galleries. Records and coordinates gallery business functions such as inventory, sales and disbursements, specialized client lists, and catalogs. 1MB min. memory. $1250. ArtCare, 212/222-7381.

ASD Professional CAD Symbol Library

CAD symbol library with more than 2400 architectural,



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Some people see electronic mail as a simple desktop utility for shooting messages down the hall. Period.

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mechanical, electrical, and electronic symbols for design and engineering professionals. Symbols conform to ANSI standards. $119.95. Advanced System Design, 303/674-0375.

The Bard's Tale
Game that revolves around the user's attempts to halt the influence of the accursed Mangar, the evil wizard, by leading an assembled cast of characters to victory through magic, sorcery, and wizardry. Characters represent ten professions and six status levels, and rounds of combat are fought to accumulate points. 512K min. memory. $49.94. Electronic Arts, 415/571-7171.

Carbon Copy Mac
Remote operations product that allows the user to operate a Mac on a network or through modem connection from another Mac on the network or serial connection. Provides file transfer between Macs, supports multiple zones and multiple serial ports, has telephone directory, and includes multiple levels of password security. Operates as a desk accessory. 512K min. memory. $299 for two pack; $199 for single pack. Microcom Software, 203/798-3800.

cc:mail LAN
Electronic mail system that provides communications among users on remote networks and electronic mail systems connected via gateways to mainframe mail services such as TeleMail, EasyLink, and IBM PROFS. 1MB min. memory. $495. cc:Mail, 415/321-0430.

ClipShare
Network clipboard application that allows all Macs on a network to share clipboard contents and messages. 1MB min. memory. Network license $295. Olduvai, 305/665-4665.

European MacProof
Proofing program for users who need to write in English, but who speak English as a second language. Checks for writing style, language usage, and spelling. Works with Aldus PageMaker, MacWrite II, MacWrite 4.6 and 5.0, and Microsoft Word 4.0. $249. Lexpertise Linguistic Software, 800/354-5656 in the United States; 41 38 55 31 31 in Europe.

FlexiGraphs
Software that lets you draw graphs and use them to derive numerical data. Supports four levels of Undo and Redo, plus a feature called Don't Do to cancel changes immediately. Can be used to draw pie, bar, and line charts. Includes its own basic spreadsheet and exports data into a variety of other spreadsheet programs. 512K min. memory. $149. For Your Information, 805/733-2990.

Flexware
Point-of-sale inventory-management system that consists of Point of Sale, Accounts Receivable, Inventory Control, and General Ledger modules. Tracks customer information, credit history, back orders, and inventory movement. Comes with 80 standard reports and can generate an unlimited number of customized reports. 1MB min. mem-
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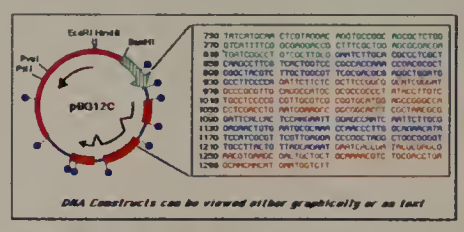
ory. $2995. Flexware, 800/527-6587 or 818/961-0237.

Gamblin' Times

Assortment of games including craps, roulette, keno, 4 × 4, blackjack, liars poker, stud poker, slot machine, tic tac toe. Supports Las Vegas rules and odds. Contains unlimited betting, rapid repeat bets, card counting, and adjustable speeds. 1MB min. memory. $47.95. Wilson Advertising, 818/791-3656.

The Gene Construction Kit

Software that provides a graphical interface for manipulating and tracking DNA sequences. Lets you cut and paste representations of DNA segments with attached comments. Graphical DNA editor keeps track of details automatically. Also can be used to create illustrations. Runs in color. 1MB min. memory. $895; academic price $495. File Searching Accessory $350. Textco, 603/643-1471.



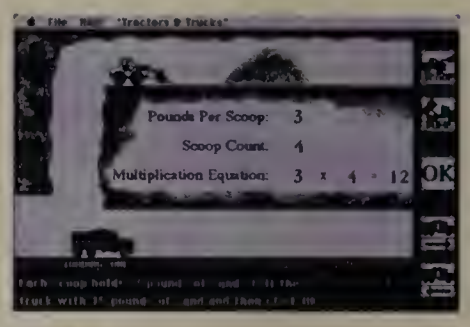
The Gene Construction Kit

Iconizer

Programmer's tool and resource type collection. Contains more than 1000 icon, PICT, ACUR, and CURS resources for use in programming projects and customizing applications. 512K min. memory. $75. DiscTech, 716/872-4693.

IV Utilities

Package of utilities for hard-disk maintenance that lets you view and modify volume information, file sectors, and file information. Lets you copy and paste volume sectors, and view them as a catalog tree block, an extens tree block. Lets you search your volume and files for decimal byte, and a decimal long. 512K min. memory. $49.99. CR&S, 800/767-4911.



KidsMath

KidsMath

Math education program for kids from preschool through third grade. Lets them move among eight different games designed to teach and reinforce basic math concepts. Includes graphics, animation, and sound. 512K min. memory. $49.95. Great Wave Software, 408/438-1990.

LogoPower and Logo Superpower

Create logos and publication graphics on a Mac. Enables the user to place a base object on a page, then add a graphic image; move; change sizes; change proportions; rotate; squeeze; skew; and clone images. 1MB min. memory. LogoPower $249; Logo SuperPower $495. Decathlon, 800/648-5640.

LunaTrace

Software that allows the user to load an optically scanned drawing or image directly into a CAD system without manually converting it to CAD format. Can be used with all scanners that support PCX

(continues)



Read this, and paying for a new computer won't sound so great.

No one wants to pay for bells and whistles they don't need. But that's what most people do when they buy a new computer.

The vast majority don't need the latest technology—even for business. But they pay for it anyway. And end up with a bunch of high-priced extras that are unnecessary, such as music-making and color enhancements.

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SOME SPEE

There's been a lot of fast talk lately about PostScript® imagesetter speeds.

So we'd like to set the record straight, courtesy of the Seybold Report on Publishing Systems. Their tests showed that the AGFA Compugraphic CG 9600-PS was faster than the Linotype L-300, in six out of eight typical jobs.

Simply put, its new PS-MAX raster image processor (RIP) lets you run more jobs each day. Which, of course, adds to your productivity and your bottom line.


SEYBOLD

Report on Publishing Systems

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Over the last several years, few issues have caused as much interest and controversy

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Speed is only one of the reasons for choosing the 9600-PS. The color output more and more of your customers are asking for is another. The 9600-PS is specially calibrated to keep spot color—and process color—films in register for professional-quality output.

And you can configure the 9600-PS to fit your business, by adding our Genics™ RIP to output your traditional CG files, and a

POSTSCRIPT IMAGESETTER COMPARISON CHART*

MACHINE	RES. (dpi)	PRICE	CLIPPATH	ROSETTE	SMALL	MONO 1	35 FONTS	NO PIX	WITH PIX	TROUT
Agfa CG 9600	1,200 dpi	$68,000	1:30	0:57	0:59	4:38	1:19	3:01	12:23	16:10
Linotype L300 RIP III	1,270 dpi	$75,000	2:03	0:57	1:06	5:29	1:55	3:13	10:24	17:06
% Difference			27%	0%	11%	16%	31%	6%	(16%)	5%

*Source: "Speed tests of high-resolution PostScript imagesetters," Seybold Report on Electronic Publishing, September 11, 1989. PostScript is a registered trademark of Adobe Systems, Inc.

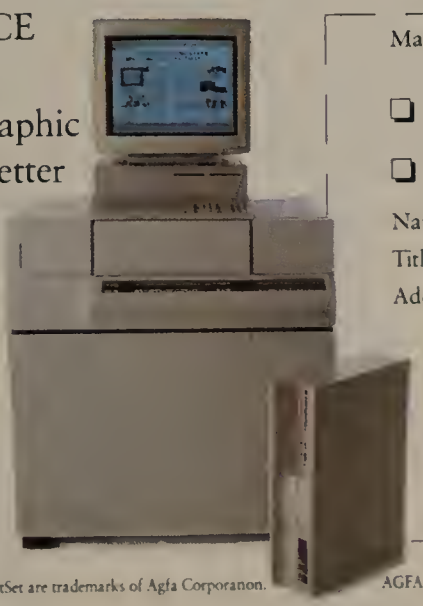
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- ❑ I'd like to know more. Please send me more information.

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format. Outputs as ASCII text file. 512K min. memory. $79.95. American Imaging Services, 800/234-7226 or 214/484-3339.

MacEnvelope Plus

Envelope and label printing software that performs postal bar coding, can import lists from any word processor or database, and maintains a database of up to 100,000 addresses. 512K min. memory. $295. Synex, 800/447-9639 or 718/499-6293.

Math Rabbit

Mathematics program for children 4 to 7. Has digitized voice, sound effects, and music. Uses animated rabbit character to teach children basics of mathematics. 1MB min. memory. $59.95. The Learning Company, 415/792-2101 or 800/852-2255.



Old Fashioned Christmas

Old Fashioned Christmas

Christmas clip art that includes 40 scanned images and is part of a series using historical illustrations from the 18th, 19th, and early 20th centuries. Others in the series are Sailing Ships, Automobiles, Holidays, Musical Masters and Instruments, Broadsides and Word Frames, and Foods and Menu Illustrations. 512K min. memory. $39.95 per edition; sampler disk $9.95. Archive Art, 213/538-7101.

Ornate Typefaces

Set of ten ornate typefaces, most with a Victorian flavor. Requires a PostScript output device. 1MB min. memory. $45. Ingrimayne Software, 219/866-6241



Ornate Typefaces

PageMaker Studio

PageMaker extension consisting of seven templates, each designed by a European designer, that can be used to create business documents such as product folders, newsletters, and annual reports. 1MB min. memory. $169. Software Solutions, 212/353-3356.

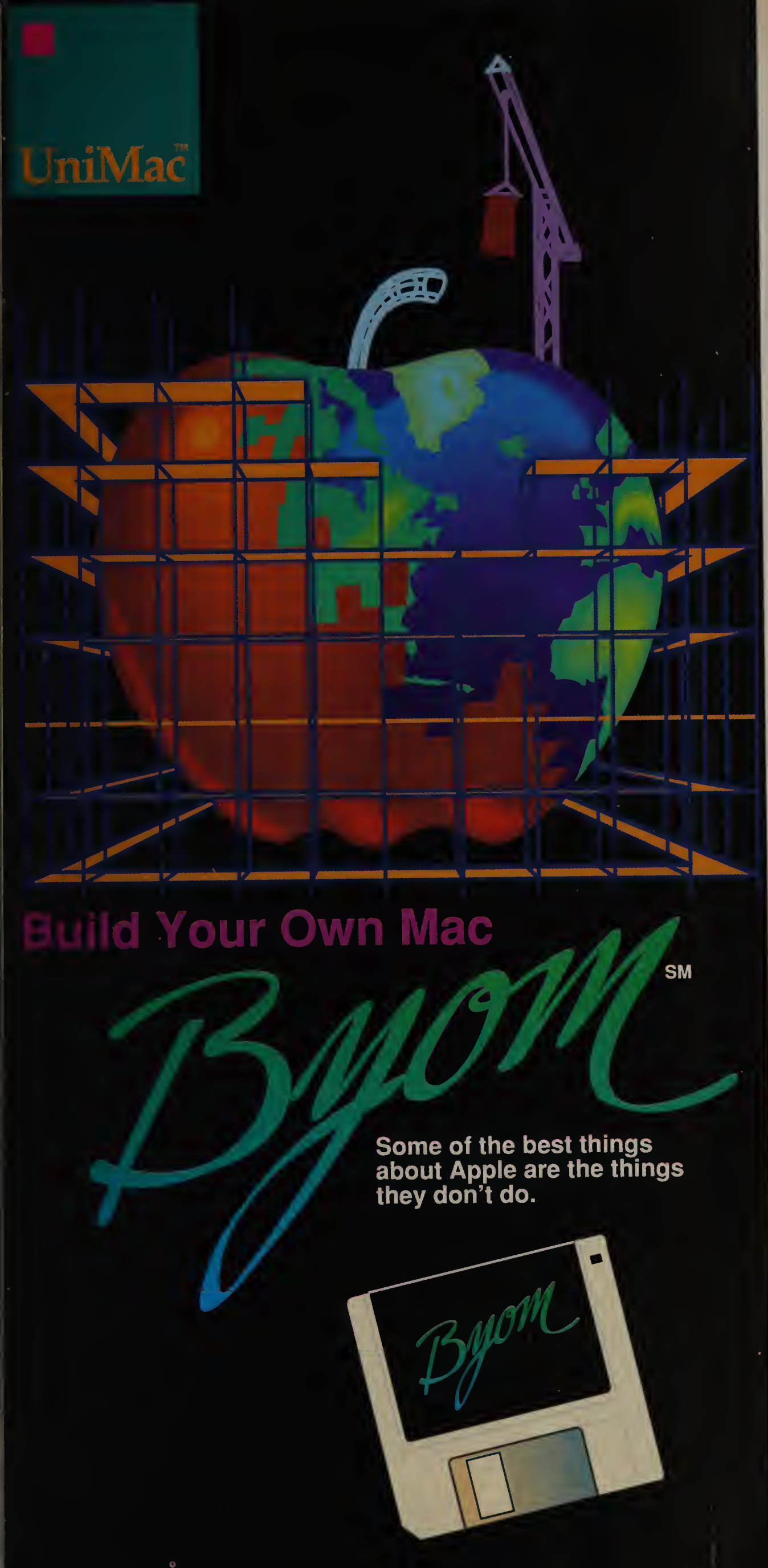
PersonalDeft

CASE software that lets you use the Mac interface to design the schema for relational databases. Supports the data types and index structures specific to each of the following databases: dB2, Oracle, Ingres, Sybase, Rdb, Informix. 1MB min. memory. $2900. Deft, 416/249-2246.

Plus

HyperCard-compatible software toolkit that supports color and multiple window size; lets you create cards that can be displayed in any size; includes database and word processing fields so text can

(continues)



Trade secrets revealed...

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What's the secret? Everything that you need to know is explained fully on a diskette titled – **BYOM**.

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The Story Of Apple® & Eve.™

In the beginning, there was an Apple. & a lot of software. Great stuff to use. Great stuff for pirates to copy free.

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be formatted and different fonts can be used. Includes a drawing environment and lets you create any shape buttons. 1MB min. memory, 2MB for color. $199. Olduvai, 305/665-4665.

PrintBar

Collection of Code 39, Interleaved 2 of 5, UPC, and EAN bar code fonts that enable the Mac to print bar codes on any Mac-compatible printer. Includes set of PostScript fonts that support high-resolution PostScript printers. 512K min. memory. $395. Bear Rock Software, 916/622-4640.

Proposal Manager 254/255

Program for architects and engineers to create federal government proposals in accordance with standard forms 254 and 255. Runs with PageMaker and includes an interactive database generator. 1MB min. memory. $279. Wordscapes, 415/968-8737.

Publish-It

Self-contained desktop publishing program for the Macintosh designed for both professional and nonprofessional publications. Includes on-screen reference system, manual, 36 icons, and more than 70 sample page layouts. 512K min. memory. $395. Timeworks, 800/535-9497 or 312/948-9200.

QuickerPrint

Programmer's source code engine that creates a printable index for all marked lines of code in MPW. Does background printing with System 6.02. 512K min. memory. $89.95. BJJ Kingston Software, 914/462-4865.

RetixMail

Electronic mail system that allows Macintosh users to send and receive messages and share data files with other users on PCs, minicomputers and mainframe systems, and other Macintosh workstations using x.400 protocol. 100-station network, including Retix OpenServer Message Package and WAN network adapter, approx. $7300. Retix, 213/399-2200.



Publish-It

ScriptEdit

Desk accessory designed to make it easier for HyperCard users to create and modify scripts, or the instructions that control your HyperCard environment. Lets you display multiple script windows simultaneously. 1MB min. memory. $79. Somak Software, 619/942-2556 or 800/842-5020.

Sound Creative

CD ROM disk in French and English offers library of sounds for use in presentations and applications written in a variety of languages. $259 plus shipping charges. Creation Development Research, BP32 91470 Limours, France.

(continues)

At only $995* it's the most affordable tape system you can own. And we can *back it up*.

Sooner or later your Macintosh will need the security of data back-up. So the question is, which method? Removable disk media is too expensive. Floppies are too slow. And some systems/media are too volatile.

That's why the Braemar SX40 Data Cartridge Sub-system makes sense. There's no faster, safer method of back-up than cartridge tape. And now, the Braemar SX40 makes it affordable.

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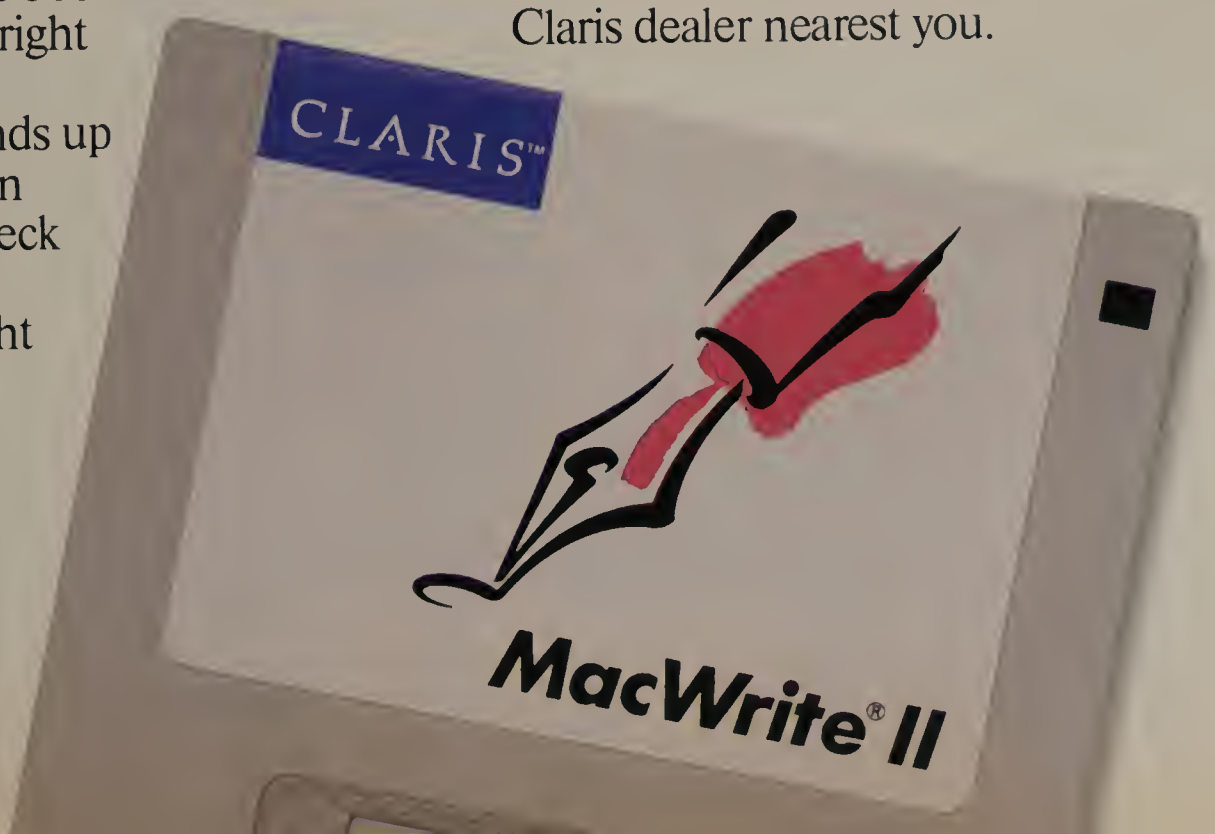
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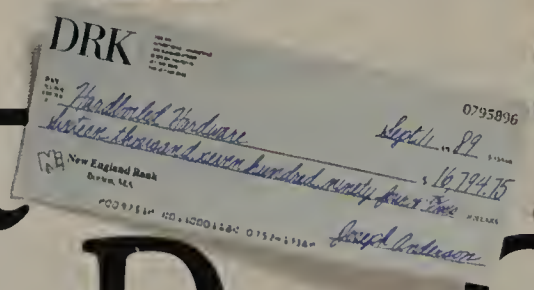


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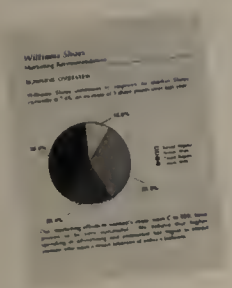
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The new high performance, personal word processor for the Macintosh. ***WordMaker's*** intuitive design makes it easy to learn and to use. It has a fast WYSIWYG display, headers and footers for both left and right pages, color capability, multiple document support, a 100,000 word spelling checker, print merge, and more! You can even wrap text around irregularly shaped graphics. It reads and writes MacWrite files for compatibility. ..... **$69.**



Moriarty's Revenge by Bull City Software

Moriarty's Revenge is an intriguing detective game. Track a suspect around the world and determine his characteristics in order to catch him. Cases increase in difficulty. Computerized detective's notebook and over 1,000 clues. ..... **$32.**

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Maxell 3½' DS/DD Disks *(box of 10)*... .16
Verbatim 3½' DS/DD Disks *(box of 10)* ....15.
3M 3½' DS/DD Disks *(box of 10)* 20
High Density 3½" Diskettes
Sony 3½' HD/DD *(10)*.....31
Verbatim 3½' HD/DD *(10)* .....31.
Dolphin Flipper 44MG Cartridge.....115.
Peripheral Land Turbo 40 Cartridge 109



Datastor 8000 by Microlytics

Datastor 8000 Personal Organizer is a portable, pocket-size information manager that reminds, notes, files, transfers, calculates and organizes your life. Carry important information with you by downloading it from your computer to the *Datastor 8000 Personal Organizer.* When you return, any information you entered can be easily uploaded to your computer. It's all you need to get on top of things... and stay there. ..... **$95.**

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PROGRAMS PLUS



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StatView SE+ Graphics .....225.
A.E.C. FastTrack Schedule 115
AEC Information Manager 409
Antic Software
Flexforms Business Template 1 49
Flexforms Business Template 2 .....49.
Ashton Tate Full Impact .....249.
BrainPower ArchiText 169
Palo Alto Software
Business Plan Toolkit .....75.
Paracomp Milo .....155.
Portfolio Systems DynoDex .....89.
Power Up Calendar Creator .....38.
Address Book Plus *(Book Binder)* .....85.
Fast Forms .....89.
Preferred Publishers
Direct Mail .....***Special*** 55.
Pro Plus WallStreet Investor V3.0.....449.



Bulk Mailer 3.3 by Satori Software

Bulk Mailer is a powerful program specifically designed for managing mail lists. It does everything you could want in a mail list program, including duplication elimination, zip and alpha sorts, plus much more. .... **$78.**

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Claris MacProject II 379
Smartform Designer .....299.
Individual 101 Macros For Excel.....35.
Mainstay Capture 49
Mac Flow 3.0 .....125.
Mac Schedule .....109.
Micro Planning International
Micro Planner 6.0 .....325.
Microsoft Microsoft Works 2.0.....185.
Microsoft Excel 2.2.....249
Micro Trading Software
Stock Watcher .....185.
Nolo Press WillMaker 3.0.....32
For the Record 28
Satori Software
Bulk Mailer 3.3 .....***Special*** 78.
Bulk Mailer Plus .....189.
Select Micro Systems, Inc. Exstatix....209.
MapMaker v4.0.....239.
SoftStream Endeavour Planner .....99.
SoftView MacInUse .....42.
Form Set Business Forms .....52.
Symmetry KeyPlan.....279.
Synex
Mac PhoneBook .....45.
Mac Envelope 4.1 .....55.
Mac EnvelopePlus .....118.
Systat Systat 4.0
(Specify MacPlus, SE or Mac II).....459
Fastat .....165.



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Artworx
GrailQuest or Daily Double Horse Racing 19
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Fokker Triplane Flight Simulator.....24.
P51 Mustang or Ferrari Grand Prix.....32.
Casady & Greene, Inc. Crystal Quest....25.
Crystal Quest w/Critter Editor .....41.
MicroLeague Sports
MicroLeague BaseBall II 39
MicroProse Pirates 34
Microsoft Flight Simulator 1.02 ..32
Miles Computing Inc.
Harrier Strike Mission II or The Fool's Errand 32
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SmartOne 2400/1200 by Best Data Products

The ***Smart One 2400/1200*** — a complete package for the Mac. Includes free communication software, free cable assembly, free access to Compuserve and Con-nect Professional Information Network. 100% Hayes compatible. Two year warranty. ..... **$145.**

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DataSoft Time & Magik .....29.
Hunt for Red October .....32.
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Electronic Arts
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Chuck Yeager Flight Simulator.....32.
Starfleet I .....36.
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Strategic Conquest Plus 2.0 .....35.
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Shodan Leprechaun.....35.
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King's Quest I, II or III .....29.
Silicon Beach Software
Airborne or Enchanted Scepters.....15.
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Beyond Dark Castle .....32.
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SoftStream, Inc. Colour Billiards .....35.
Mac Man or Solitaire DA 23
Software Toolworks
Chessmaster 2100 .....32.
Life & Death .....32.



PUBLISH-IT! by Timeworks

PUBLISH-IT! is the first completely self-contained desktop publishing program for Macintosh computers. It allows both professional and non-professional business communicators to write, design and produce dynamic sophisticated documents. .. **$219.**

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Zork Zero 35
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Sim City Terrain Editor 18
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Tetris *(Mac II)* 24
GATO, Orbiter or Pt-109 26
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Aatrix Payroll Plus .....149.
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Aatrix TimeCard .....69.
Aatrix Payroll v3.5 .....95.
Brown-Wagn MacLedgers .....155.
Service Industry Accounting .....205.
Chang Labs Rags to Riches Professional 3 pack .....355.
Rags to Riches Retail Business 3 pack .....355.
Rags to Riches Gen. 3-Pak 3.1 *(GL/AR/AP)* .....285.
Rags to Riches Inventory Control .....235.
Rags to Riches Professional Billing .....235.
Rags to Riches GL, AR, or AP .....118.
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MultiLedger .....259.
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Simply Accounting .....***Special*** 219.
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Dac-Easy Light .....42.
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Insight One Write .....99.
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Monogram Business Sense .....***Special*** 269.
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Back To Basics Professional *(GL/AR/AP/INV)* .....155.
ProPlus Software
ProPlus Accounting .....619.
Satori Software
Components GL .....369.
Survivor Software
MacMoney 3.0 *(Enhanced Ver.)* .....59.



ProModem 9600 *Plus* by Prometheus

The ***Promodem 9600 Plus*** is a 9600 bps, V.32 compatible modem. This means the *Promodem* can connect with other V.32 modems. With the ProModem's MNP-5, your data will be sent error free and speeds up to 19,200 bps are attainable. ..... **$750.**



C·A·T Version 3 by Chang Labs

Placing a new definition on "personal productivity"! ***C·A·T*** combines a relational database with an integrated word processor, drawing program, forms generation, and on-line calendar, that files each document by person, type and date/time of creation for instant retrieval. And the multi-user/sharing/and database publishing features allow extension of this productivity to an entire group. ..... **$225.**



MacCommpack 2400 by Practical Peripherals

Macintosh Communication Package. A 2400 baud stand-alone intelligent modem just for the Macintosh. Even the color is Mac compatible. Made in the USA. Five (5) years warranty, parts and labor, factory repair or replacement. ..... **$225.**

COMMUNICATION SOFTWARE

Compuserve Compuserve Starter Kit ....24.
Compuserve Navigator .....45.
DataViz MacLink Plus/Translator 105
MacLink Plus with Cable 125
Dow Jones
News/Retrieval Membership Pack .....24.
Desktop Express .....95.
Freesoft Red Ryder V10.3 .....52.
Hayes Smartcom II 3 1 .....88.
Infosphere Liaison .....175.
Insigna SoftPC 245
Prometheus MAcKNOWLEDGE 139
Meta Comet
Accu-Weather Forecaster 58
Software Ventures
Microphone II v3.0 219
Solutions, International BackFax 125
Synergy Software VersaTerm 89
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Macinware Carrying Cases by I/O Design

Features a tear and soil resistant Cordura outer shell and ultra-high density foam. Compartments which holds mouse, cords, extended keyboard and extermal hard drive. Comes in navy, platinum and black.

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PictureBook by Loop Software

PictureBook is a powerful finder-like DA that replaces the scrapbook and uses multiple windows to store, name and annotate your clip-art. It reads PICT, EPS and MacPaint formats; resizes, crops and even prints. Rated 5 mice by MacUser. ..... **$40.**

EDUCATIONAL/CREATIVE SOFTWARE

A Lasting Impression ResumExpert ..... 49.
ResumExpert Cover Letters ..... 49.
ResumExpert Sales & Marketing ..... 49.
ResumExpert Management ..... 49.
Ars Nova Practica Musica 2.1 ..... 73.
Barron's Barron's SAT ..... 35.
Great Wave Software KidsTime ..... 26.
Kids Math ..... 26.
Number Maze ..... 26.
Crystal Paint ..... 25.
Learning Company Reader Rabbit ..... 31.
Math Rabbit ..... 31.



MiniCad+ by Graphsoft

MiniCad+, the U.S. and Australian 1989 MacWorld CAD Award winner, provides the Mac's best integrated CAD solution. *MiniCad+* offers: full-featured 2D, full 3D, a hotlinked spreadsheet and programming language. The new v2.0 adds a DXF translator, constraint palette, EPS and more. And for those needing professional 2D only, don't forget Blueprint, top-quality CAD at a price you can afford! ..... **$499.**

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String Quartet, Country or Heavy Metal ... 14.
Super Studio Session ..... 69.
Bright Star Technology Talking Tiles .... 27.
Alphabet Blocks ..... 30.
Broderbund Type! ..... 19.
Sensei Geometry, Calculus or Physics .... 59.
Where in the World is Carmen SanDiego? ..... 27.
Where in Europe is Carmen SanDiego? .. 29.
Where in the USA is Carmen SanDiego? 29.
Jam Sessions ..... 29.
Carina Software Voyager 1.0 ..... 69.
Coda Mac Drums .... 31.
Perceive ..... 50.
Finale ..... 479.
Davidson & Associates
Speed Reader II ..... 27.
Math Blaster or Word Attack! ..... 27.
Electronic Arts Mavis Beacon Typing .... 32.
Deluxe Music Construction Set V2.5 84
Deluxe Recorder ..... 95.
First Byte
Dinosaur Discovery Kit ..... ***Special*** 27
Puzzle Storybook or Rhyming NoteBook 27
Learning Lab
Monsters & Make Believe ..... ***Special*** 24.
Dinosaur Days ..... ***Special*** 24.
Nordic Body Works ..... 28.
Clock Works ..... 28.
Coin Works ..... 28.
TurboMath Facts ..... 28.
Earth Works ..... 28.
Flash Works ..... 28.
Lemonade Stand ..... 28.
Naval Battle ..... 28.
PreSchool Disk 1 ..... 28.
PreSchool Disk 2 ..... 28.
Word Search ..... 28.
PreSchool Pack ..... ***Special*** 49.
Penton Overseas VocabuLearn ***Special***
Spanish, French, German or Italian *(ea.)* 30.
Japanese ..... 36.
Primera Software Different Drummer .... 59.
Simon & Schuster
Typing Tutor IV ..... 30.
Springboard Top Honors ..... 59.
Family Matters ..... 28.
Atlas Explorer ..... 28.
Tactic Software SoundClips 1 or 2 ..... 49.



HyperDialer by DataDesk

HyperDialer allows you to connect your Macintosh to your existing telephone for automatic dialing. Works with HyperCard, SideKick, Focal Point, C.A.T., SuperCard and QuickDEX phone numbers. Connects to the speaker port ..... **$32.**

ACCESSORIES

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DataDesk Hyper Dialer ..... ***Special*** 32.
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Lynx Computer
Turbo Trackball *(Mac & Mac+ or Mac SE & Mac II)* ..... 65.
MicroSeeds WristMac ..... 149.
WristMac Executive ..... 199.

VocabuLearn by Penton Overseas

Dynamic foreign language program for the Mac! This interactive Hypercard Stack is available in five languages and two levels. Each program contains (2) 90 minute audio cassettes, complete word list and HyperCard Version 1.2.



Farallon MacRecorder Sound System *(Mac SE or Mac II)* ..... 164.
Goldstein & Blair
Macintosh Bible 2nd ed. ..... 20.
Impulse Audio Digitizer w/soundware .. 135.
I/O Design
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Macinware Plus Carrying Case ..... 64.
Macinware SE Carrying Case ..... 75.
Macinware IICX Carrying Case ..... 89.
Mobius Fanny Mac QT *(Beige or Platinum)* ..... 60.
Mouse Systems A+ Mouse *(MacPlus)* ... 63
A+ ADB Mouse *(Mac SE/Mac II)* ..... 83.
Moustrak MousePad 7" x 9" Size ..... 8.
MousePad 9" x 11" Size ..... 9.
Moustrak Pad L/F 9" x 11" ..... 10.
Orange Micro Grappler Spooler ..... 39.
Grappler C/Mac/GS or Alphabits ..... 79.
Grappler L/Q or Grappler L/S ..... 103.

Anti-Glare Filters by Kensington

Large Screen Anti-Glare Filters features, optical quality glass with anti-reflection coating, with special cleaning fluid included. Benefits include reducing screen glare by 96%. Improved screen contrast and clarity by up to 20 times, eliminating the fuzzy "halo" around the text and graphics. Easy to install for a light-tight fit. ..... **$65.**



Macinware II Carrying Case ..... 99.
Imageware II Carrying Case ..... 49.
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Teakwood Roll-Top Disk Cases:
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Double Micro Cabinet *(holds 90 disks)* ... 21.
Triple Micro Cabinet *(holds 135 disks)* .... 31.
Kensington Mouseway *(Mousepad)* ..... 8.
ImageWriter or ImageWriter II Cover 9
Macintosh Plus/SE Dust Cover 9
Apple Security Kit ..... 34.
Antiglare Polarizing Filter 33
Mac II Stand and Cable Kit ..... 65.
Mac II Monitor Stand 65
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ImageWriter LQ Black 17
ImageWriter LQ Four Color 20
Seikosha Ribbon Black ..... 6.
Soprls
High Trek Imagewriter II Carry Case 49
High Trek Mac Plus Carry Case 59
High Trek Mac SE & ext kybd Carry Case 69
Targus Imagewriter II Carry Case Blk. ... 49
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TurboFloppy 1.44 by Peripheral Land



TurboFloppy 1.44 is a high density disk drive which increases your Macintosh floppy disk data storage capacity. It also allows you to copy MS/DOS files from 3.5" MS/DOS disks and then transfer them for use with Macintosh applications. The *TurboFloppy* comes standard with a 5 volt linear power supply, an on/off external termination switch, TurboCache & TurboBack software. MacPlus compatible and SCSI connected. ..... **$355.**

MacConcept 3.0 by Klex Software



The 3D conceptual design system, sophisticated enough for engineers to illustrate complex wireframes, yet simple enough for artists to manipulate them into masterpieces. It provides multi-dimensional spacial design features that match those found in industry's most sophisticated design systems. Those include real-time dynamic rotation and perspective, multiple design levels, animation and floating point accuracy. ..... **$999.**

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Complete PC
Complete Half Page Scanner.....375.
Complete Full Page Scanner.....775.
Cutting Edge
Two-Page Display Monochrome Monitor 995.
Digital Vision
Computer Eyes Mac.....209.
Computer Eyes Mac II.....349.
Koala Technologies Corp.
MacVision 2.0 *(Digitizer)*.....219.
Mac Director.....109.
Kurta
IS ADB Tablet 8½x11.....255.
IS ADB Tablet 12x12.....385.
IS ADB Tablet 12x17.....625.
Cordless 4 Button Cursor.....65.
LogiTech ScanMan.....345.
Seikosha
SP1000 *(Imagewriter comp.)*.....235.
Summagraphics Bit Pad Plus.....325.
ThunderWare ThunderScan.....189.
LightningScan.....369.
Mac II Power Accessory.....42.



Acta Advantage by Symmetry

This popular outliner takes your work from rough idea to organized reality. As both a desk accessory and a stand-alone application, use *Acta Advantage* as a writing tool, planner, organizer, scheduler, presentation aid, list maker, note taker — even a simple database. ..... **$65.**

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Deneba Software
Big Thesaurus.....59.
Spelling Coach 3.0 Professional.....115.
Electronic Arts
Thunder! II.....52.
Lundeen & Associates
WorksPlus Spell.....55.
Microlytics, Inc.
Word Finder *(Synonym Finder)*.....36.
Electronic Word Finder.....59.
DataStor Personal Organizer.....***Special*** 95.
Sensible Software
Sensible Grammar or BookEnds.....53.
Working Software Spellswell 2.0.....45.



MAC-101 Keyboard by DataDesk

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UTILITY SOFTWARE

Adobe ATM.....57.
Abbott Systems, Inc. CanOpener.....65.
ALSoft Master Juggler.....64
MultiDisk.....49
Disk Express II.....64
Font/DA Juggler Plus.....42.
A.S.D. TWINS.....69
FileGuard v1.04.....***Special*** 95.
Fileguard II.....***Special*** 129.
Berkeley System Design After Dark.....25.
Stepping Out II.....50.
Beyond Inc. Menu Fonts 2.....28.
Borland Sidekick 2.0.....68.
Bravo SPAMM.....49
Bull City Software Moriarty's Revenge..32.
Central Point Software
Copy II Mac *(Includes MacTools)*.....24.
PC Tools Deluxe Mac.....45.
CE Software
QuicKeys *(Macro Program)*.....65.
MockPackage Plus Utilities.....32.
Dantz Software Development
Retrospect.....155.
Dubl-Click
Calculator Construction Set v2.0.....45.
Electronic Arts Disk Tools Plus.....31.
Farallon Computing
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FastBack II.....108.
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MacSafe or KnightWatch.....87
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Microlytics, Inc.
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Redux.....52.
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Read-It! O.C.R. 2.1.....245
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Peripheral Land TurboOptimizer.....39
TurboBack.....55
TurboCache.....73
TurboSpool.....73
SuperMac Software SuperSpool 5.0....59
SuperLaserSpool 2.0.....89
Diskfit 1.5.....59
Sentinel 2.2.....89.
Symantec MacSQZ!.....52.
Symantec Utilities for Mac *(SUM II)*.....95
Symantec AntiVirus for Mac *(S.A.M.)*.....63
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Circle 149 on reader service card

Quick Tips

Failing floppies, circular text, spacey tiles in FreeHand, and more

by Lon Poole

HyperCard buttons and fields that function in a similar manner when you click them probably have identical scripts for handling specific actions. For example, all fields in a set of the check box fields described in a tip last July respond the same way to mouse clicks because their scripts are the same. (These fields work like check-box buttons but can have different on-off settings on each card.)

You can put the duplicate script lines in the card, the background, or the stack script and remove them from the button and field scripts. Where you put script lines determines their purview. Put them in a card script and they handle events only when that card is open. Put them in a background script and they handle events when any card of that background is open. Script lines in a stack script handle events for any card in the stack, and the Home stack script handles events for any card in any stack.

If you click a button or field whose script has no handler for that mouse-click action, HyperCard automatically looks elsewhere for a handler. It looks first in the card script, second in the background script, third in the stack script, and fourth in the stack script of the Home card. By centralizing duplicate button and field scripts into card, background, and stack scripts, you can reduce the overall size of your stack and simplify future script modifications.



The most common action handled in button and field scripts is a mouseUp event. It occurs as you finish clicking the mouse button. If a card, background, or stack script handles mouseUp events for buttons or fields, you may need to add lines to the script that determine what has been clicked. Otherwise the script may try to do something impossible, like highlighting a card or putting text into a button. For example, you can remove individual scripts from check-box fields if you put the following script lines in the background or stack script:

```
on mouseUp
  get the short name of the target
  if it contains "Check" then
    if target is empty
    then put "•" into target
    else put empty into target
  end if
end mouseUp
```

These script lines were revised by John R. Robbins of Hunstville, Alabama, from the ones published in last July's column. This script will not work unless the names of all check box fields—and only those names—contain the word *Check*.

SEPARATION LOSS

Q At *Chemicalweek* magazine, we use PageMaker to lay out four-color pages that contain graphics saved as encapsulated PostScript files in FreeHand 2.0 and Adobe Illustrator 88. Some of the graphics contain PICT images. For example, we used a scanned dollar bill for the bars of a bar chart drawn in FreeHand. When we make color separations using Adobe Separator, we lose the PICT images. (The same thing happens to MacPaint images.) We tried autotracing and redrawing the placed PICT images, but the quality isn't good enough. How can we separate PageMaker pages that contain PostScript graphics that in turn contain PICT images? What about converting the PICT images to PostScript before placing them in FreeHand or Illustrator?

Karen Mattejat
New York, New York

A You can save a PICT or TIFF image as an encapsulated PostScript (EPS) document using PixelPaint. Then you can place the EPS document into a FreeHand or Illustrator graphic, but the resulting hybrid graphic still won't separate properly when placed in PageMaker. There's no way I know of to do color separations of pages that contain hybrid graphics. If anyone out there has the answer, please let us know.

(continues)

A STRANGE SOUND

Q My dear little Mac 512KE is three years old. For the past three months it has been acting rather strange. After running smoothly for 30 minutes to an hour, it begins to emit a barely audible high-pitched sound. I would guess the sound has a frequency of approximately 15kHz. What is causing this, and will it be expensive to fix?
Hearing Things in S.F.

A The sound you describe is probably caused by the flyback transformer. It's part of the video circuitry on a Mac Plus, 512K, or 128K, and is located near the top-left corner of the power supply board. The transformer can usually be quieted by being removed, disassembled, and having a drop of oil placed in the gap of its armature (see "Bad Vibrations"). This procedure should only be done by a qualified technician. It costs about $60 at CJS Systems in Berkeley, California (415/849-3730), a company that specializes in Mac repairs but is not an authorized Apple dealer.

The noise does not mean the flyback transformer is failing, according to John Sawyer of CJS Systems. When that happens, the screen goes black, the case gets very hot on the top-left side, and you may even see a puff of smoke. Then if you switch your Mac off and back on, it may make a chirping sound every quarter- or half-second. Replacing the transformer costs about $120 at CJS Systems. If you take your noisy Mac to an Apple dealership, you'll probably get a reconditioned power supply board that will cost you between $250 and $300.

NEW CHICAGO

Q How do I replace the Chicago font with a version that I edited using ResEdit? The changes I made don't show up in menus, windows, and so forth, but I examined my new Chicago with ResEdit and found that the changes are there.
Matthew Strange
Mansfield, Pennsylvania

A Your Mac is getting the Chicago font from its ROM (permanent memory), not from the System file. The Chicago font is in the ROM of all Macs except the 128K and the unenhanced 512K. To make your Mac use your customized Chicago, you must give it a new font number and put the related font ID into the Chicago FOND resource. Normally, Chicago is font number 0. You can change it to any other number less than 256 that's not in use by another font. (Most font numbers below 40 are taken by popular fonts.) Multiplying the font number by 128 and adding the point size of a particular FONT resource gives you the font ID for that resource. For example, the standard font ID for 12-point Chicago is 12 (0 × 128 + 12 = 12). Chicago also has a 0-point resource—font ID 0—that contains only the font name. If you changed the font number to 100, the font

(continues)



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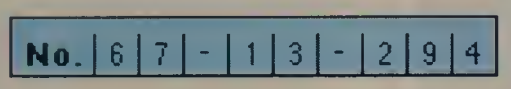
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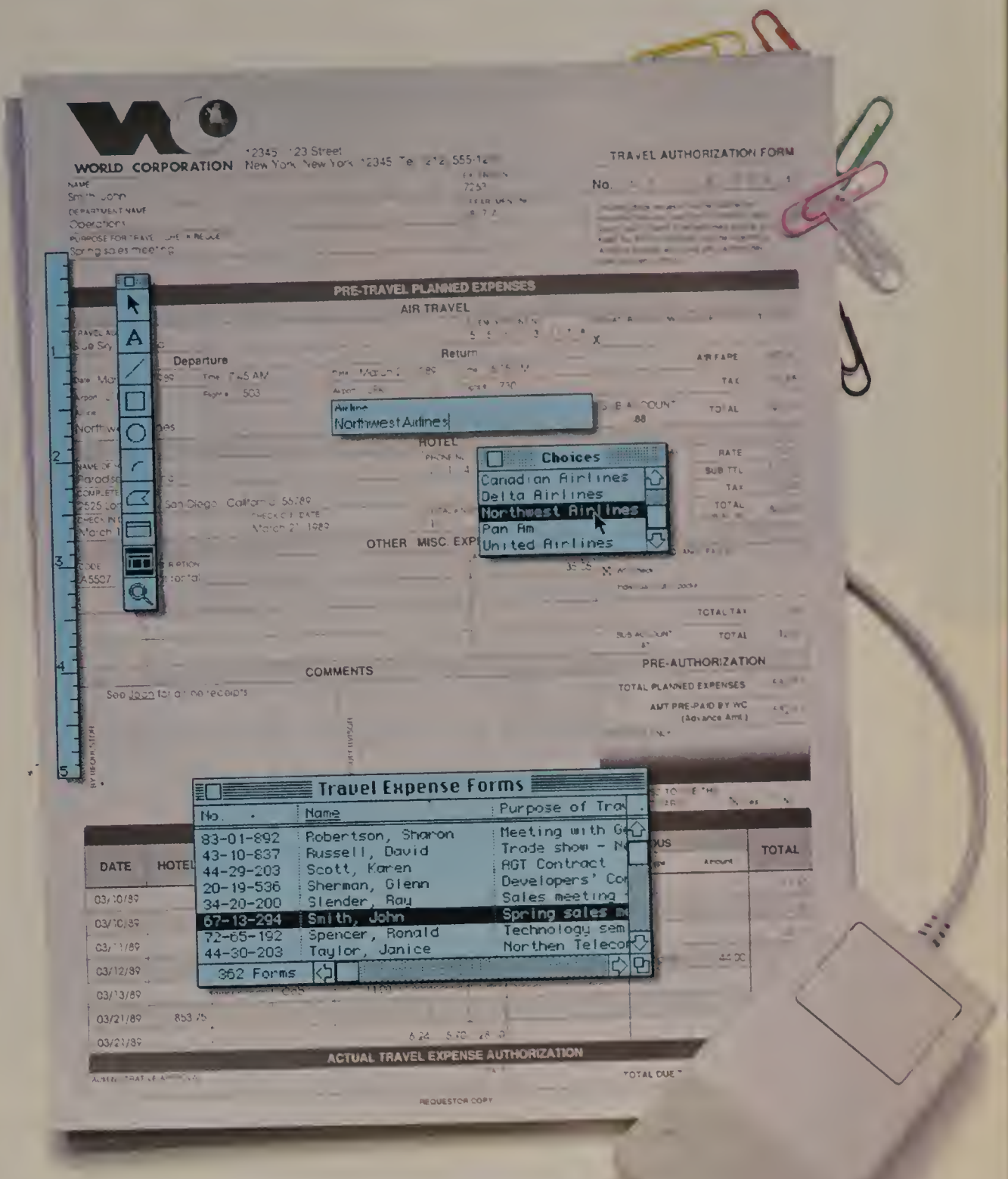
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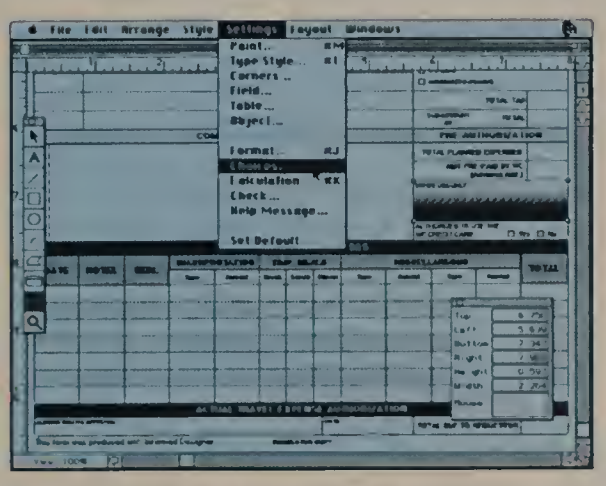
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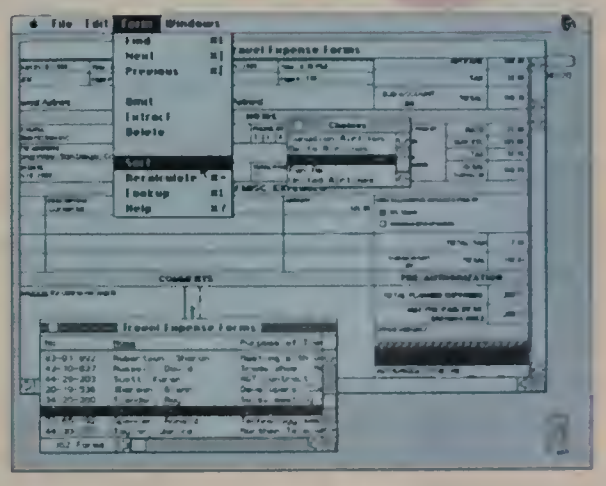
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Circle 202 on reader service card.

ID for the 12-point size would be 12812 and the font ID for the 0-point resource would be 12800.

To change Chicago to font number 100, use ResEdit to open the copy of the System file that contains your new Chicago. Select the FONT resource type and choose Open General from ResEdit's File menu (do not double-click the FONT resource type). In the window that opens, select the FONT resource identified as "Chicago" ID = 0 and then choose Get Info from ResEdit's File menu. In the information window that opens, change the ID from 0 to 12800. Close the information window. Back in the window that lists FONT resources, select the one identified as ID = 12. Choose the Get Info command, change the ID to 12812 in the information window that opens, and close the window. Close the FONT resources window and open the FOND resources. Find the Chicago FOND and open it. Scroll to the end of the FOND editing window that appears and change the entry labeled Res ID from 12 to 12812. Quit ResEdit, answering Yes when it asks you whether you want to save changes. After quitting, remove your current System file from the System Folder (but don't drag it to the Trash yet). Put the copy of the System file that you've been editing into the System Folder, and rename the file System. Restart your Mac. If everything works OK, throw out your old System file. If not, try a different font number for Chicago.

FLOPPY DISK FAILURE

Q Help! When I insert a floppy, all too often the Mac responds "This is not a Macintosh disk. Do you want to initialize?" or "This disk is unreadable." I use a number of Mac SEs and Mac IIs and it seems that at least three of them have this problem. My dealer doesn't know what's happening but I can't believe I'm the only Macintosh user who's experienced this.
Billy Ray McKelvy
De Queen, Arkansas

A If the problem is apparent on only certain machines, their floppy disk drives may need servicing or replacing.
(continues)



Why Ralph Volk cancelled Linotype for a Varityper PostScript® Imagesetter

"I made head-to-head comparisons between Linotype® and Varityper® PostScript imagesetters for the same jobs. What I found, more often than not, was that Linotype produced a 1 point miss or overlap at what looked like uniform intervals on the page. I'm told this banding is a result of their start/stop scheme and that it will only get worse as the equipment gets older. Whatever it is, the results are unacceptable for my work, particularly my color work. On the other hand, Varityper produced flawless, high-quality output at speeds much faster than those other guys. And when I found out that I could get the Varityper for substantially less money, there was no contest . . . I said, buy the Varityper!"

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A Clarification

The Varityper advertisement reproduced above appeared in the June, 1989, July, 1989 and August, 1989 issues of MacWorld. The advertisement inaccurately portrayed the comparisons conducted by Varityper's customer, Ralph Volk, in his evaluation and purchase of a PostScript imagesetter. Mr. Volk neither had nor cancelled a purchase/license agreement for a Linotype PostScript imagesetter. He did not test Linotype's current PostScript imagesetter, the Linotronic 300 recorder with RIP 3 processor, and he made no head-to-head comparison of that imagesetter with the Varityper 4300P PostScript imagesetter. We regret these inaccuracies and any confusion they might have caused.

Varityper's message, then and now, is that before you conclude the purchase of a PostScript imagesetter, make your own comparisons. We urge you to speak with representatives of Varityper and Linotype and accurately evaluate each company's products.

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Circle 451 on reader service card.

It's also possible that those computers get the heaviest use, or perhaps they are located in harsh environments.

A floppy disk's brown magnetic coating, which stores your documents and applications, gradually erodes from normal use because the disk drive's read-write head touches the disk surface while the disk rotates. As a result, all floppy disks fail eventually. They may last anywhere from six months to ten years, with two years being about average. Because there is no guaranteed safe time limit, you should regularly copy your valuable documents onto backup disks.

Because disks wear out faster in smoky, dusty, or hot environments, you should store them in an area whose temperature is between 39 and 127 degrees Fahrenheit (4 degrees and 53 degrees centigrade) and whose relative humidity is between 8 and 90 percent (noncondensing). Also, store disks away from things that create magnetic fields, such as electric motors and electric tools, which can erase the information on disks.

REPRINTING ONE FORM LETTER

TIP: After printing 150 form letters using a merge document and a database document in Microsoft Works, you discover that letter number 89 contains an error. To correct and reprint only letter 89

1. Correct the information for letter 89 in the database.
2. Select record 89 in the database.
3. Switch to the form letter using the Window menu.
4. The revised letter 89 should appear in the form letter window. If you see field names in the form letter instead of the field information for letter 89, choose Show Field Data from the Edit menu.
5. Choose Print—not Print Merge—from the File menu and only letter 89 prints.

Nicholas W. Jones
New City, New York

CURVED TEXT

TIP: To center text at the top of a circle in Aldus FreeHand 2.0, choose center alignment for the text, join it to the circle, and rotate the joined text and circular path 90

(continues)

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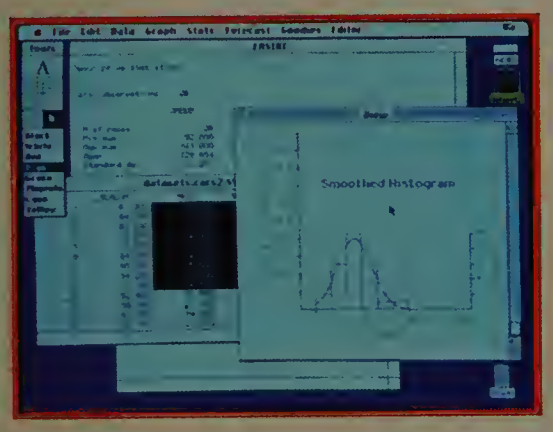
You have lots of data.
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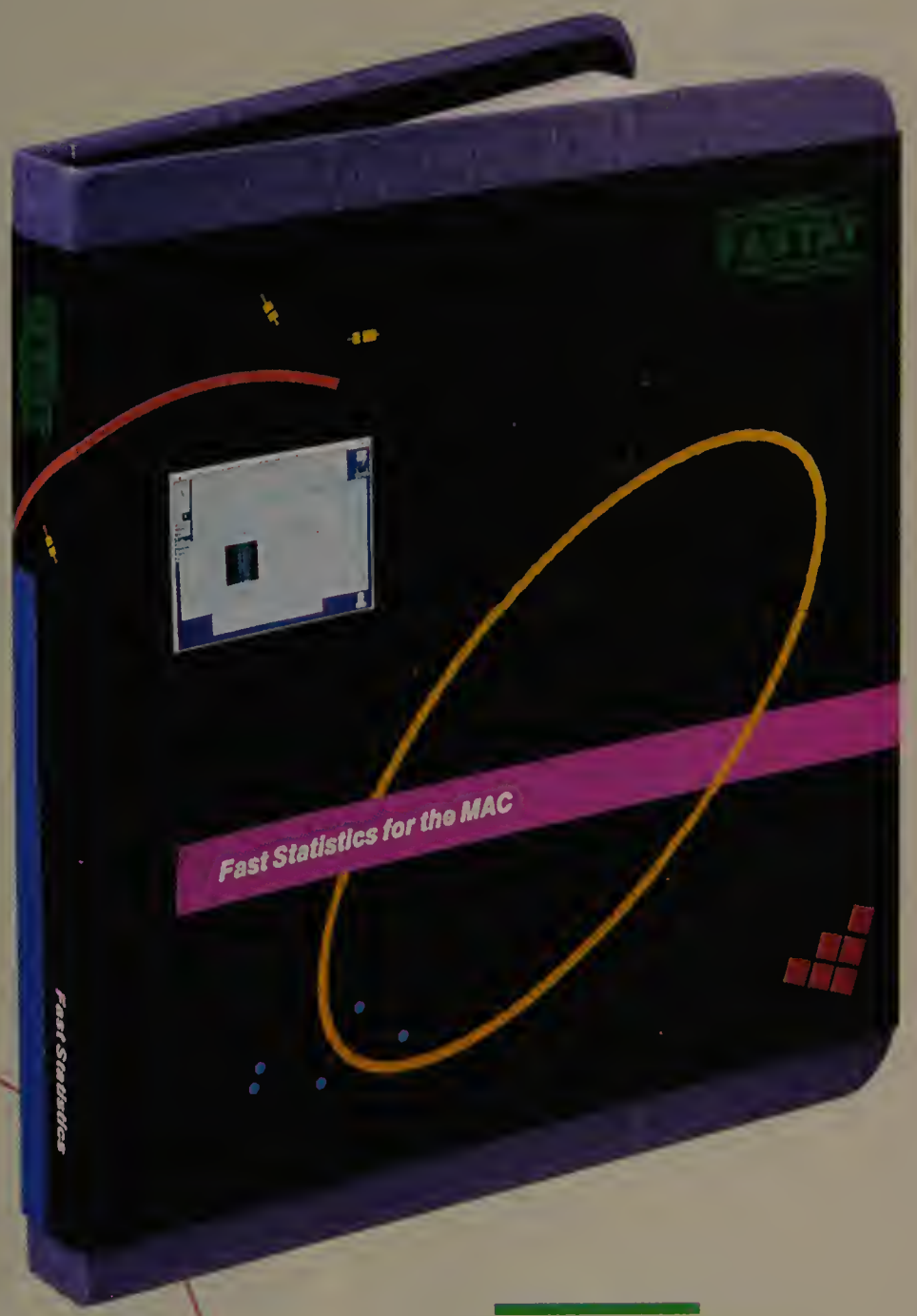
Some of the graphs are only a click away.
Click on a variable name, and you get a histogram or a box plot of the variable. Click on a regression output or a cell in a correlation matrix, and you get a scatterplot of the variables.



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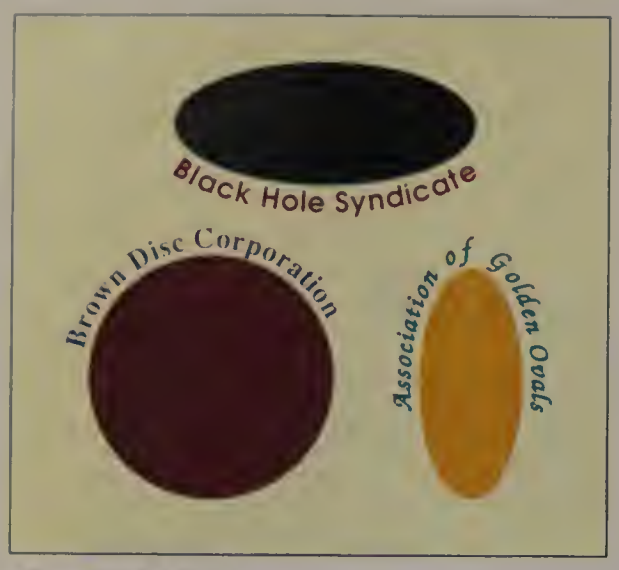
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System requirements: 1 megabyte of memory and hard drive.
Mac II version available. Unlimited free technical support.

*MacWeek September 13, 1988
**Suggested Retail Price

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Above and Below
In Aldus FreeHand, you can easily center text above and below circles and ovals by first joining the text to the curved shape and then rotating the joined elements.

degrees. Centering text at the top of an oval requires first drawing the oval on its side. Then you can join center-aligned text to the sideways oval and rotate them 90 degrees. To position the joined text above, below, or along the curved path, use the Element Info command (after selecting the joined text).
Brian Korver
Beaverton, Oregon

To center the text at the bottom of a circle or oval, rotate it –90 degrees instead of 90 degrees, and then reflect it 90 degrees to make it read correctly (see "Above and Below"). You can also cut a closed shape like a circle or oval, as Aldus documentation suggests. Joining text to an open path is fairly intuitive in FreeHand 2.0.

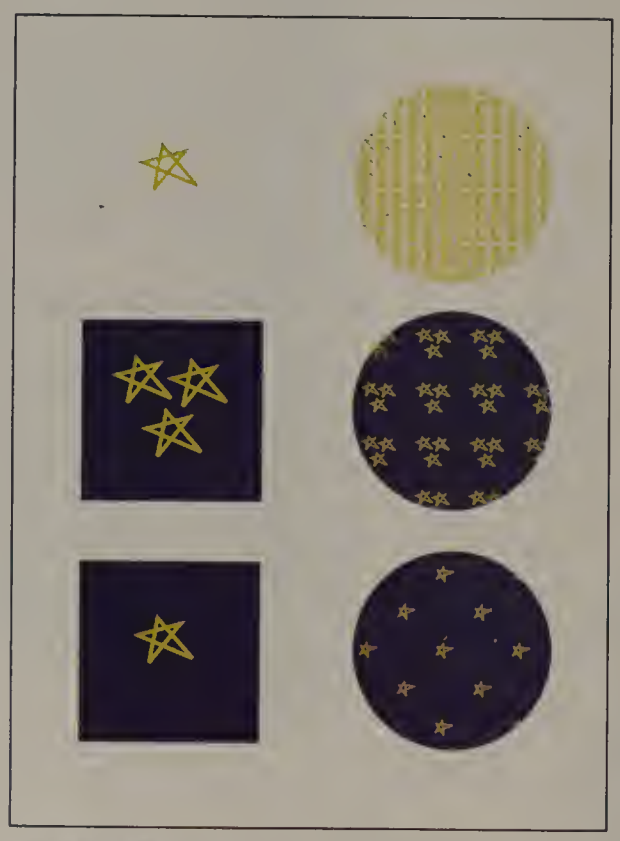
E-Z OPEN

TIP: Moving through folders looking for an application you want to open can be tiresome. You can open many applications by double-clicking their settings or preferences files located in the System Folder.
Ravi Kothari
Morgantown, West Virginia

I have a folder named Alios that contains an empty document for each application I use often. To open one of those applications, I double-click its document in the Alias folder. I put the olioses in a folder rather than on the desktop, because under MultiFinder, icons on the desktop don't come to the front when you switch to the Finder. (If you don't use MultiFinder, putting them on the desktop will work fine.) For infrequently used applications, you can use Find File from the Apple menu. When the application name appears in the Find File window, select it and choose Move to Desktop from the Find File menu (⌘-M). If the application has support files that must be in the same folder as the application, such as a help file or a spelling dictionary, then find and move the folder that contains the application instead of the application itself. You can easily return the application to its original folder by selecting its icon on the desktop and choosing Put Away from the Finder's File menu.

TILE STYLE

TIP: Aldus FreeHand 2.0 lets you fill an object with square tiles you design yourself, but it always places the tiles edge to edge. If you want the effect of space around each tile, place your tile image on a background square of the desired color. Then copy the background along with the image as your paste-in tile art (see "Laying Tile").
Dean Morris
New York, New York



Laying Tile
Aldus FreeHand has filled each circle with the tile pattern to its left. All the tiles are scaled to 30 percent, and in the bottom circle, they are laid at a 45-degree angle. Increasing the amount of background in the tile results in a sparser-looking fill.

FLOPPY COVERUP

TIP: The FDHD floppy disk drive in the Mac SE/30, IIx, and IIcx can store 1.4 megabytes on an HD (high-density) floppy disk. A hole in the disk shell, located across from the write-protect hole, informs the FDHD drive that it has an HD disk. If you initialize an HD disk using an 800K drive, which ignores the extra hole, you get an 800K disk that an FDHD drive won't be able to read. By covering the hole in the HD disk with a piece of tape, you can make an FDHD drive treat it as an 800K disk.
Ilja Bedner
Malibu, California

KIND SELECTION

TIP: There's an easy way to select all objects of one type in Claris CAD and MacDraw II. Simply choose the tool that corresponds to the type of object you want to select—text, rectangle, oval, line, and so on—and then choose Select All from the Edit menu. This is a fantastic way to change the font or size of all text, alter the thickness of all lines of one type of object, or add a fill pattern to a set of objects.
Michael E. Bierman
Canoga Park, California

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Lon Poole answers readers' questions and offers advice in this monthly column. He has collected many of the tips in his book Mac Insights *(Microsoft Press, 1986) and more recently has written the quick reference guide* HyperTalk *(Microsoft Press, 1988).*

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Getting Started with Programming

What programming is,
how it's different on the Mac,
and a look at some programming
languages and products

by Jim Heid

Good afternoon, Mr. Phelps. Your mission, should you decide to accept it, is to program a computer. You must assemble a series of instructions in perfect sequence—with no typographical errors—that perform their intended task exactly as planned. Fail on any one of these counts, and your mission will fail. Good luck. This column will self-destruct in about 2500 words.

Mission impossible? Not at all. It's done every day (although, as far as I know, not by Peter Graves). Programming is tricky, but without it, the Mac wouldn't exist.

Programming on the Mac can be a challenging, enjoyable, and yes, frustrating, experience. This month, I explain the concepts involved and show how Mac programming differs from that of other computers. I'll also spotlight some popular programming languages plus some products that simplify the process. Want to try writing a short program in HyperCard? You'll find instructions in "A HyperCard Programming Project."



JOHN CRAIG

WHAT IS PROGRAMMING?

Programming involves thinking about a problem, devising a list of steps for solving the problem, then supplying those steps to the computer in a form it understands. For example, let's consider the problem of calculating a car's gas mileage. First, let's list the steps needed to solve the problem:

- Find out how many miles were driven.
- Find out how many gallons of gas were used.
- Divide the number of miles driven by the amount of gas used.
- Record the answer.

Why can't you type those steps into the Mac and have a program? Because human languages are ambiguous. Consider the fourth step above: record the answer. Should the Mac send the answer to the screen? To a printer? Should it record the answer on disk? Or on a tape recorder? In human languages, a word can have many meanings. We pick the correct meaning (usually) when we hear or read the word in context.



Today's computers can't decipher a word's meaning from its context. That's one reason why the ultimate word processor—one that responds to dictation—doesn't yet exist.

LANGUAGES TO PROGRAM BY

You can't program the Mac in English, but you can use a reasonable facsimile—a *programming language*. These languages use vocabularies of English-like words, called *keywords*, combined with symbols for representing math instructions and other functions. To create a program, you assemble the keywords and symbols according to the rules, or *syntax*, of the language you're using. "BASIC Gas Mileage" shows what our gas mileage problem looks like in *BASIC*, a popular beginner's language.

Just as human languages have standard parts of speech—nouns, verbs, adjectives, and so on—computer languages provide different categories of keywords for controlling the computer and processing information (see "Keyword Categories"). The keywords themselves, their exact spelling, and the ways they're combined are three factors that make each language different. "Three Ways to Count" illustrates this point by showing, in three languages, a simple program that counts from one to ten.

A variety of computer languages have evolved over the decades. Many even have their own dialects, variations in syntax that programmers must keep in mind if they program for a variety of machines. Many beginners prefer BASIC because it's more like English; its syntax isn't as rigid as that of other languages. But this flexibility can lead to sloppy programs that are difficult to read and understand. Pro-

(continues)



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gramming pros use more *structured* languages such as *Pascal* and *C*. Both require more rigid syntax than BASIC, but they are better suited to creating legible, well-organized programs. That's important, because the person who modifies a program a year after it's written may not be the same person who wrote it.

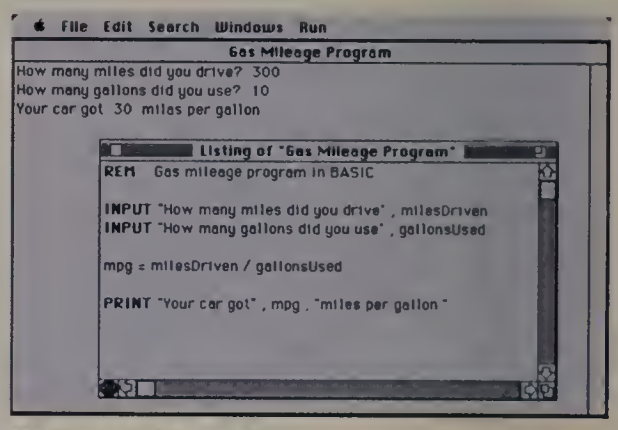
Another difference between languages is the amount of programming required to perform certain tasks. *High-level* languages like Pascal and BASIC look most like human languages and let you perform complex tasks—such as reading something from a disk file—with relatively few lines of code. To the uninitiated, *low-level* languages such as *assembly* look like gibberish. More to the point, they require an intimate knowledge of the Mac's memory and microprocessor, and often require dozens of lines of code to perform even simple tasks. Some languages, such as C, straddle the fence between high-level and low-level. With C, you're not intimately involved with the Mac's memory and microprocessor, but you're very close friends.

Why use low-level languages if doing so means more work? Because the programs they create generally run faster than those created by high-level languages, and they often require less memory.

THE PROGRAMMING PROCESS

The process begins with brainstorming, which might involve drawing a flowchart,

(continues)



BASIC Gas Mileage

This BASIC program, written in Microsoft's QuickBASIC, calculates a car's gas mileage. The top window shows the program's source code; the bottom one shows its output. As with many programming products, QuickBASIC displays keywords in bold. This isn't a Mac-like program, since it doesn't use dialog boxes for interacting with a user.



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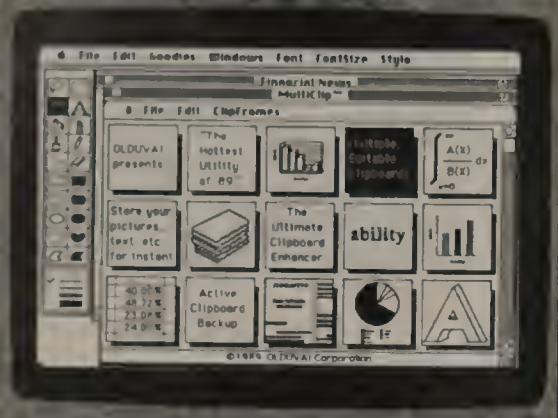
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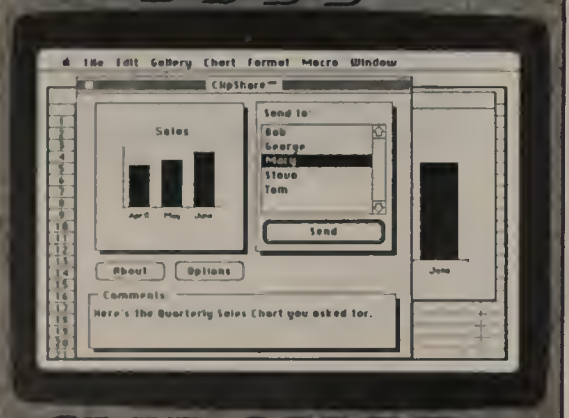
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KEYWORD CATEGORIES

Category	Purpose	Example
assignment	assigns a value to a variable	Thanksgiving = "11/23/89"
conditional	tests for conditions and responds accordingly	IF cold THEN
		wear overcoat wear gloves
		ELSE
		wear T-shirt wear shorts
input/output	gets entries and displays results	INPUT "What's your sign?"
		PRINT "Buzz off, creep."
logical	tests relationship between two or more entities	IF lunchtime AND hungry THEN
		eat lunch
looping	performs a task until a certain condition is met	WHILE plate contains food
		take a bite
relational	tests relationship between two entities	IF myPay < yourPay THEN
		me = jealous

a graphic blueprint that illustrates the components of the program and how it will work (see "Follow the Flowchart").

After brainstorming, you're ready to write your program's instructions—its *source code*—using a *text editor*. These cousins to word processors provide specialized features designed for programming. For example, programmers indent certain program lines to indicate their relationship to the lines around them (see "Three Ways to Count"). Lines nestled within a *loop,* a portion of a program whose instructions repeat a certain number of times, are indented to allow someone reading the program to quickly identify them as instructions that repeat. Text editors provide formatting features that make these indents easier to create and adjust. The text editors built into products such as Think's Lightspeed Pascal (from Symantec) and Microsoft QuickBASIC automatically indent lines and format keywords in boldface so they stand out.

After you've typed your source code, you'll be eager to test your program to see if it works. Here's where you'll encounter the most significant difference between programming packages: whether they use an *interpreter* or a *compiler* to translate your program into the instructions the Mac's microprocessor needs.

An interpreter translates source code on the fly—one line, or *statement*, at a time—as a program runs. To use your program, you must start the interpreter, open the program, and then tell the interpreter to run the program.

A compiler translates the source code into *machine code*—the internal language used by the Mac's microprocessor. From there, a component called a *linker* processes the machine code to create an *application file.*

A compiler's strength is its ability to create a complete application that you (or anyone) can start from the Finder—something an interpreter can't do. In addition to producing stand-alone applications, most compilers can also produce desk accessories (whose internal structures differ from application files') and other types of program code, such as HyperCard external commands (XCMDs) and external functions (XFCNs). And compiled programs generally run faster than interpreted ones, since that on-the-fly translation process isn't needed.

Another drawback of interpreters is that anyone who wants to run an interpreted program will also need a copy of the interpreter. But interpreters have their strengths as well. Because they translate and run a program one statement at a time, you can make changes in a program *listing* (the source code that comprises the program) and then immediately run the program to see the results. Compilers generally don't offer this start-and-stop pro-

(continues)

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A HYPERCARD PROGRAMMING PROJECT

HyperCard includes a built-in programming language called HyperTalk. In this introduction ta HyperTalk programming—or scripting, as Apple calls it—yau'll add a button to your Hame stack that lets yau calculate a car's gas mileage.

Ta try this example, yau must set HyperCard's user level to Scripting. With the Home stack apen, choose Last from the Go menu, click an the Scripting button, then choose First fram the Ga menu.

PHASE 1: Create the Button

Here's haw to create the button that, when clicked, will run yaur program. Fram the Objects menu, choose New Button. One (named New Button) then appears in the middle of the first card in the Hame stack. Drag the new button ta a blank area of the card.

Next, dauble-click an the new buttan ta display the Button Info dialog box. Select the follawing optians, but dan't click OK yet: Shaw Name, Auto Hilite, and Rectangle. In the Buttan Name text box, type **Gas Mileage**.

PHASE 2: Type the Script

Yau're ready to type the program, ar script.

1. Click an the Script button

HyperCard's script editor windaw appears, containing twa lines: **on MouseUp** and **end MouseUp**. Natice that the insertian point is between the twa lines; yaur script goes there.

2. Type the text shawn in Script 1. (Nate the ¬[called a *saft-return symbol*] that appears at the end af several lines. If a statement is too lang to fit an ane line, put this symbol [type Optian-Return] where yau want the line ta break sa that HyperCard knaws the statement cantinues an the next line.)

Proofread your work as yau go; when yau're finished, click OK or press the Enter key.

```
on mouseUp
    osk "How mony miles did you drive?"
    if It is empty then exit mouseUp else put It into ¬
      milesDriven
    osk "How mony gollons did you use?"
    if It is empty then exit mouseUp else put It into ¬
      gollonsUsed
    divide milesDriven by gollonsUsed
    put milesDriven into gosMileoge
    onswer "Your cor got" && gosMileoge && "miles ¬
      per gollon."
end mouseUp
```

Script 1

```
Repeot with count = 1 to the length of milesDriven
    put the chorToNum of chor count of milesDriven ¬
      into temp
    if temp <48 or temp >57 then
      onswer "Sorry, you must enter numbers only."
      exit mouseUp
    end if
end repeot
```

Script 2

PHASE 3: Try It

Ta try the program, choose the Browse tool (the pointing finger) fram the Tools menu, then click an the Gas Mileage button. If all goes well, dialog boxes appear asking haw many miles yau drave and haw many gallans of gas yau used. Finally, a dialog box appears telling you yaur gas mileage.

If yau got an errar message beginning "Can't understand," your script may cantain some typographical errars. To display the script, press ⌘-Optian while clicking on the Gas Mileage button.

PHASE 4: Trap those Errors

A good program anticipates errars and *traps* them befare they cause prablems. This pragram already does same errar trapping—the **If...then** statements check to see if yau left a dialog box blank and stop the program if yau did. But what if yau type letters in the box instead af numbers? Try it, and yau'll receive an errar message when the script tries to divide the letters.

The salutian is to scan each dialog box to make sure it cantains anly numbers. The code in Script 2 does just that. Insert thase lines just befare the line in Script 1 that asks haw many gallans yau used. Then copy all inserted lines (select them and press ⌘-C) and paste them (using ⌘-V) just befare the line reading "divide milesDriven by gallonsUsed." Next, in the newly pasted sectian, change the two occurrences af milesDriven ta gallonsUsed. Finally, try the program again and type same letters to see the errar trapping in actian.

The error-trapping routine warks by first determining haw many characters yau typed, and then examining each character in turn to verify that it's a number. If it encounters a character that isn't a number, it displays the error message.

Important Concepts

Our script uses these programming concepts:

- *Input/output statements* (**ask** and **answer**) to interact with a user.
- *Variables* (**milesDriven** and **gallonsUsed**), which are named storage places in memory.
- A *math aperator* (**divide**) to perfarm math on values yau enter.
- *Conditianal statements* (**if . . . then**) to perform tests and act an the results.
- A *looping structure* (**repeat . . .** and **repeat**) to perfarm a task a given number of times

gramming convenience, although some, such as Think's Lightspeed C and Think's Lightspeed Pascal, come close.

CALL THE EXTERMINATOR

Few programs run perfectly the first time. It is more likely that your program will contain some errors, known as *bugs*. Perhaps you will omit a keyword or forget to type a symbol. With low-level languages, bugs can result if you handle the Macintosh's processor or memory carelessly (such as changing or moving information vital to the Mac's operation). These are only a few of the types of bugs that can surface; you might also create a program that performs calculations incorrectly (bad news if you are writing accounting software) or whose steps simply aren't in the proper sequence.

(continues)

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WxC 1000

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Revenue *(In Thousands)*	Actual	$2,184	$3,198	$3,892	$2,610	$4,030	$5,325
	Forecast	$1,613	$2,200	$2,513	$2,365	$3,000	$4,725
	Variance	$571	$998	$1,380	$245	$1,030	$600
	%	135%	145%	155%	110%	134%	118%

...United States. ...d between October 1, 1989 and January 31, 1991. See your participating dealer for additional details.

ut of ten calculating lative people.

when it's been changed in Microsoft Excel.

To insure data integrity, we've even built in alerts that will warn you of such grievous errors as circular references. In fact, Microsoft Excel is so bright, it will actually review your worksheet and flag any formulas that don't fit an established pattern.

And to give you more artistic license, we'll even throw in a free copy of Canvas 2.0 DA™, a draw and paint accessory. Just buy the Microsoft Excel package before January 31, 1990.

Now, we've left a lot out in this short discourse, but Microsoft Excel hasn't. So be sure to ask your dealer for a complete explanation of its capabilities. And you'll see how Microsoft Excel will make your job easier and better.

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WinMark Copiers

MEMO:

TO: *Shannon Pitts*

FR: *Peter Cohen*

DT: *November 13th, 1989*

RE: *Presentation to the Board*

In preparation for the annual meeting, I've created a 20-minute slide presentation on our successful entry into the small printer market.

The presentation will explain to the shareholders that, on a basis of sound marketing strategy, reinforced with our knowledge of the printer business at other levels, we have been able to grow from a 2 percent share of market, to 9 percent in 18 short months.

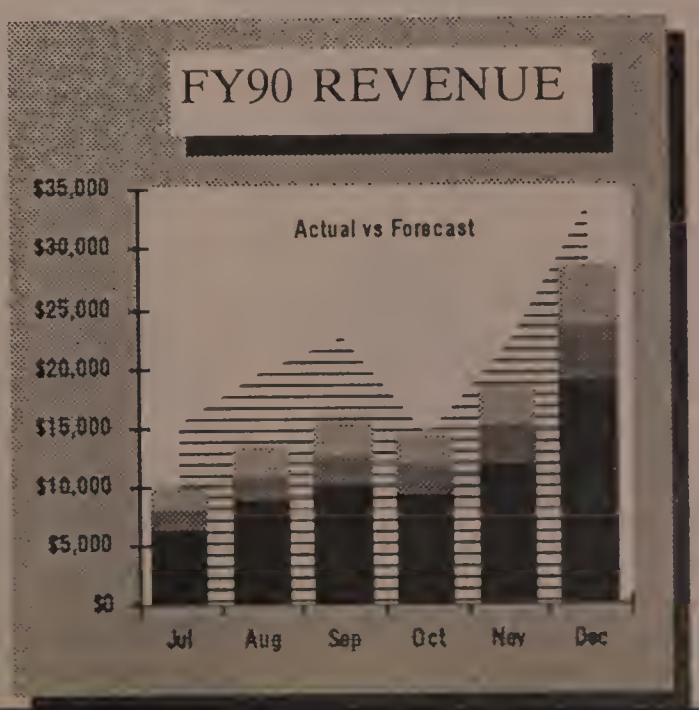
To the right is an excerpt of the presentation which illustrates our growth. Anticipated concerns will probably center around quality of service and the ability to meet market demand over the next year.

We should be able to squelch any fears by explaining that our small printers have a very low (4%) field repair call requirement at present.

And our assembly resources here in the

WxC 2000	JUL	AUG	SEP
Revenue *(In Thousands)*			
Actual	$8,400	$12,300	$13,900
Forecast	$6,453	$8,800	$10,050
Variance	$1,947	$3,500	$3,850
%	130%	140%	138%

With a very respectable 9 percent share after only 18 months, we feel we can reach 15 percent by the end of the next fiscal year (see six month projection).



Most programming products provide *debugging* features to help you catch bugs. Some products offer *source-level* debuggers, which let you run your program one line at a time (see "Stepping through Software").

A more advanced level of debugging involves watching how each machine-language instruction affects memory and the Mac's microprocessor. Think's Lightspeed Pascal is one product that offers this *machine-level* debugging. Many advanced programmers also swear by separate debuggers such as ICOM Simulations' TMON. Generally, only advanced programmers who are writing complex programs need to descend to this nitty-gritty debugging level.

PROGRAMMING THE MACINTOSH WAY

Programming on the Macintosh differs from programming on most other computers. With most computers, a programmer must spend a lot of time designing the program's *user interface*—the way it interacts with the users. Programs for the Mac use standard user-interface elements—pull-down menus, dialog boxes, windows, and so on.

When programming the Mac, you don't have to design user interface elements, but you do have to know how to create and use the elements the Mac provides. That means becoming familiar with the Mac's *Toolbox*, a library of small, specialized snippets of software, often called *routines*.

The Mac's Toolbox routines are stored in the Mac's read-only memory (ROM) chips and in the System file, and are grouped into categories called *managers*. The Menu Manager, for example, contains routines that create menus, while the Dialog Manager creates dialog boxes. Mac programmers use the Toolbox routines to create windows, menus, dialog boxes, and other user-interface elements.

Another concept that often trips up budding Mac programmers is the fact that Mac programs are *event driven*. A Mac program doesn't say to a user, "These are the things you're allowed to do now. Don't try to do anything else." Instead, it says, "I'm ready for whatever you might do. Go ahead, move my mouse. Click its button. Press a key. I can handle it." A Macintosh program is always ready to respond to anything.

But this flexible operating style means more work for programmers, and if you're used to programming other machines, it means rethinking some basic concepts of program design. A Mac program spends most of its time in an *event loop*, essentially running in circles, waiting for something to happen. When an event occurs, the program must determine what kind of event it is—a *mouse-down event*, a *keyboard event*, or another type of event—and then respond appropriately.

Yet another unique Mac programming concept is that of *resources*. In Mac programs, elements such as menus, dialog boxes, and text messages are stored separately from the program code, and they're called into use as needed by the Mac's Resource Manager. This separation of code and resources allows programmers to create foreign-language versions of their software by editing the appropriate resources, without changing the code. For example, you might edit the menu resource to list choices in Spanish or French without having to change the code that *(continues)*

```
FOR count = 1 TO 10
   PRINT "This is number" , count
NEXT count
```

```
#include <stdio.h>

main()
{
int count;
for (count = 1; count < 11 , count++ ) {
    printf("This is number %d\n", count);
    }
}
```

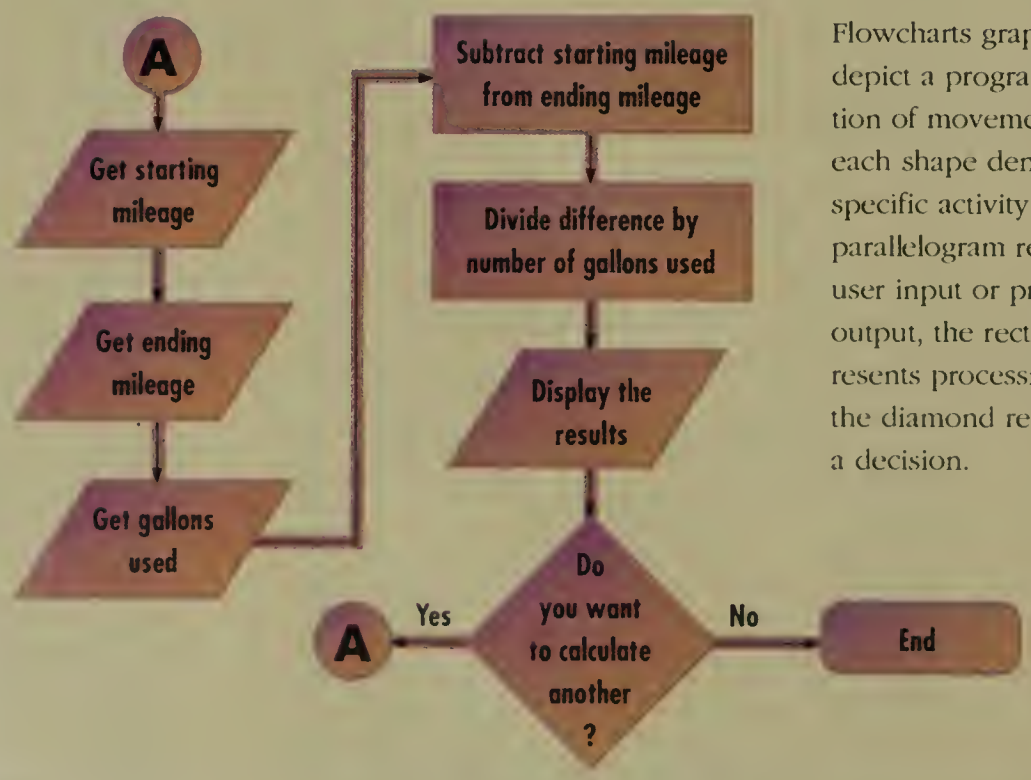
```
program CountToTen;
 var
   count: integer;

begin
 count := 0;
 for count := 1 to 10 do
   writeln('This is number', count);
end.
```

Three Ways to Count

This is one program—it counts from one to ten in three languages: BASIC (top), C (middle), and Pascal (bottom). Note the differences in the keywords themselves, in their spelling, and in how they're arranged. The more rigidly structured C and Pascal require certain statements at the beginning of the program to set aside memory and control the compiler. This program also illustrates the concept of looping, executing a given set of statements repeatedly. The statements within the loop are indented to set them off from the rest of the program.

FOLLOW THE FLOWCHART



Flowcharts graphically depict a program's direction of movement, with each shape denoting a specific activity. The parallelogram represents user input or program output, the rectangle represents processing, and the diamond represents a decision.

IT TAKES A CERTAIN TYPE TO MAKE A STATEMENT THIS BOLD.



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A BEGINNING PROGRAMMER'S TOOLKIT

So you want to learn to program. The first thing you'll have to do is choose a language. Start with Pascal, not because it's the best or easiest to learn, but because Apple's official technical manuals for the Toolbox—the *Inside Macintosh* series from Addison-Wesley Publishing Company (1985–1988)—use Pascal in their examples and instructions. If you end up programming in a different language, your familiarity with Pascal won't be wasted.

A great way to learn Pascal is to use Just Enough Pascal, a disk-and-book tutorial that you use with Think's Lightspeed Pascal (see *Reviews*, July 1989). In Just Enough Pascal, you build a Mac program step by step, pasting in new sections of code as you learn what they do. It's an excellent way to learn Pascal and to learn how to use Lightspeed Pascal.

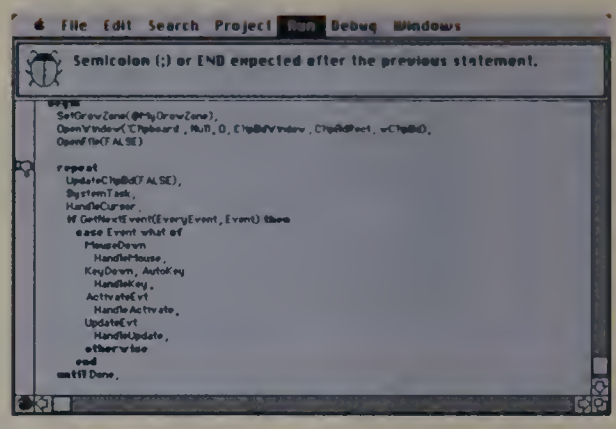
You might also try a *code-generating* program such as Smethers/Barnes' Prototyper or Bowers Development's AppMaker. These programs let you click and drag to create menus, dialog boxes, and other user-interface elements. Choose a command, and the program generates the Pascal or C source code that you'd otherwise have to type yourself. Both Prototyper and AppMaker can generate code for Lightspeed C and Pascal, and for the C and Pascal compilers that run under Apple's Macintosh Programming Workshop (MPW), a heavy-duty programming environment that Apple and many large software firms use.

If pecking out programming statements seems too daunting, consider starting out with a product such as Mainstay's V.I.P. or Maxem's Cause. With V.I.P. (short for visual interactive programming), you program by drawing a *flowchart*—interconnecting icons representing keywords and program functions. You can create a stand-alone V.I.P. application by using Translator to Light-Speed C, Mainstay's code-generation utility that turn V.I.P. programs into C code. With Cause, you create programs by drawing the windows and reports used for entering and viewing data and then specifying how they interact. Neither VIP nor Cause has what it takes to create and maintain a major-league program like Microsoft Word or MacDraw, but either is up to handling small programming tasks. And both are great ways to hone your stepwise programming skills without doing a lot of typing.

And you'll need reading material. Volumes I through V of *Inside Macintosh* are the standard reference bibles for the Mac's Toolbox. Apple's Tech Notes series are invaluable supplements to *Inside Macintosh;* they're available from the Apple Programmer's and Developer's Association (800/282-2732). If you're new to Pascal, *Oh! Pascal!* by Doug Cooper and Michael Clancy (W.W. Norton, 1985) is an excellent introduction to the language.

If you're familiar with Pascal or another language but you're new to Mac programming, Stephen Chernicaff's three-volume set, *Macintosh Revealed* (Howard Sams, volumes 1–2, 1987; volume 3, 1989), will get you up to speed. Scott Knaster's *How to Write Macintosh Software* (Howard Sams, 1988) and his *Macintosh Programming Secrets* (Addison-Wesley, 1988) will help, too. A first-rate guide to learning Think's Lightspeed C is *Macintosh Programming Primer* by Dave Mark and Cartwright Reed (Addison-Wesley, 1989). Apple's own *Programmer's Introduction to the Macintosh* is a superb primer for programmers who are new to the Mac.

Another excellent source of help and guidance is CompuServe. Its APPDEV and MACPRO forums contain source code for hundreds of programs that you can take apart and modify. Symantec also has forums for Lightspeed C and Pascal users (type GO THINK at any ! prompt). Also consider a subscription to *MacTutor* (P.O. Box 400, Placentia, CA 92670), a monthly Mac programming journal that covers all popular languages.



Stepping through Software
A source-level debugger lets you run your program one step at a time and watch the results of each instruction. In Think's Lightspeed Pascal, a pointing finger denotes the line that will execute next. If a syntax error is found, the pointing finger turns into a "thumbs down" icon and a dialog box appears describing the nature of the error. The Pascal code in this window is part of an application's main event loop.

tells the Mac when to display that menu. Indeed, resources are so easy to alter that even nonprogrammers can edit them using Apple's ResEdit resource-editing utility, available through user groups and communications services. You can also get ResEdit from the Apple Programmer's and Developer's Association (APDA), if you become a member of APDA.

As you learn to program the Mac, prepare to be frustrated. Grappling with Toolbox concepts, event loops, and resources can be taxing for those unfamiliar with the peculiarities of Macintosh programming. Fortunately, you don't have to start from square one. You can take advantage of the many sources of help available (see "A Beginning Programmmer's Toolkit"). And don't try to do too much too soon. You wouldn't try to write a novel in a language you had just learned to speak; similarly, you shouldn't make your first programming project a complex one. Start small and master one concept at a time.

But first, turn the page before this column self-destructs. And good luck. M

Jim Heid is a Macworld *contributing editor who each month focuses on a different aspect of Mac fundamentals. His latest book is* Inside the Apple Macintosh, *an advanced user's guide published by Brady Books.*

The power and performance of big system CADD...MicroStation Mac

Intergraph introduces MicroStation Mac – microCADD software merging the power of 2D/3D engineering design software with the ease of the Macintosh user interface.

Multiple-screen graphics

MicroStation Mac supports a maximum of eight separate views of a design. These are resizable and can be placed on any of up to six graphic screens, the maximum supported by the Macintosh. This allows for better display flexibility, resulting in more productivity and less design time.

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MicroStation supports 2D and 3D design and reference files so a user can attach up to 32 design files to the current file for reference. Reference files can reside locally or be accessed remotely over a network, thus allowing users working on the same project to view all the files simultaneously.

Fully Intergraph-compatible

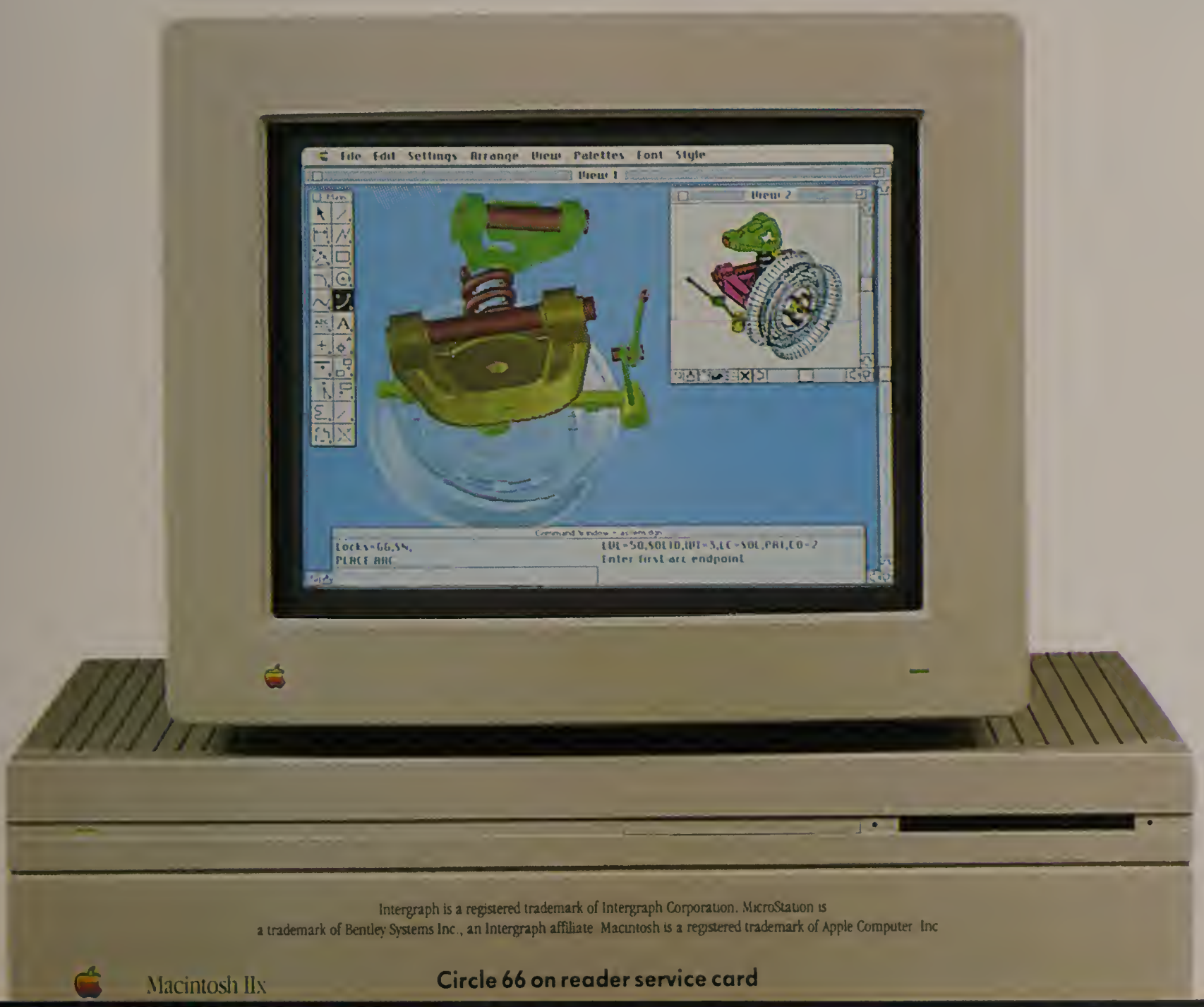
Files are maintained in the same binary format on every platform so that MicroStation/IGDS files can be freely transferred between the VAX, PC, Intergraph workstation, and Macintosh with no translation required.

With over 450 commands and features to meet your design needs, MicroStation Mac exemplifies the most complete functionality of any CADD package available for the Macintosh, making MicroStation Mac your best choice for design needs.

For further information on MicroStation and the Intergraph Education Center and Reseller programs: in the U.S., call 800-345-4856; in Alabama only, call 800-345-0218; outside the U.S., contact an Intergraph sales office.

INTERGRAPH

Image showing the Apple Macintosh user interface.



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Macintosh IIx

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Insights on MacMoney 3.5

Tips for making this easy-to-use finance program even simpler

by Alan L. Slay

MacMoney, the popular financial management program from Survivor Software, is so simple to use that people seldom encounter major problems with it. Despite its ease-of-use, there are tips and points to remember that can save you time and help make your bookkeeping as smooth as possible. Thanks to David Sander, who heads up Survivor Software's technical support for MacMoney, for his help in preparing this column.

NAMING FILES

When you first open MacMoney, you are asked to name the data files in which the program will store all your transactions. MacMoney then creates ten separate files—each with a name you have chosen plus a different suffix—that appear on the desktop. But you need to remember that if you later decide to change the name of a file, you'll have to change all of them; all the files must have the same name or you won't be able to open any of them (see "All or Nothing").

The simplest way to name files is to use your last name and the calendar (or fiscal) year. Then, when you create files for the next year, it's best to give them a new name that consists of your name plus the next year. If you use exactly the same



name you used for the previous year, the Mac (after a warning) replaces the old file with the new one, and you lose all the data for the prior year.

ELIMINATING CATEGORIES

If you have a category with transactions in it, MacMoney (following accounting principles) won't allow you to remove it. But suppose you've created a category called Clothing and later you decide to break down your expenses into Mary's Clothing and Sam's Clothing. You can't split up the old Clothing category, so instead you just add two new ones. Your total clothing expenditures for the year will equal the sum of all three files, with Mary's and Sam's expenses available for only the latter part of the year. When you move on to the next year, the Clothing category will have no transactions, so you can delete it and continue using Mary's and Sam's clothing accounts. Note, however, that this deletion may be made only in version 3.5, not in previous versions.

The way you search for files should determine the file-naming convention you follow. For example, mouse users will find names like Clothing-Mary and Clothing-Sam helpful when they're looking for files (starting the names with the same word keeps them together in alphabetical order so they'll be easier to find and select).

But if you regularly use the keyboard rather than the mouse to locate accounts, avoid such names as Clothing-Mary and Clothing-Sam, because you'll have to type at least c-l-o-t-h-i-n-g-m to get to the Mary account. Instead, name them Mary's Clothing and Sam's Clothing; then you'll have to type only the first few letters before pressing ⌘-F to locate the account.

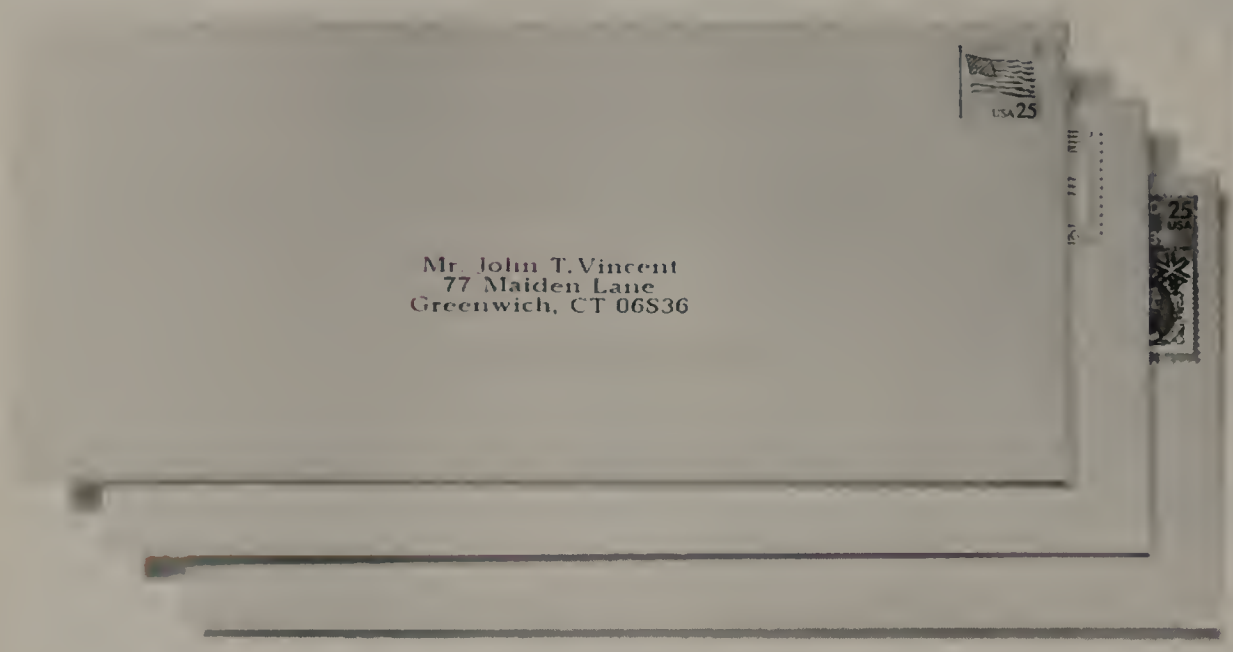
TRANSACTION EDITING

Some people run into problems when they try to edit interaccount transactions. Say, for example, you have two bank accounts—one at Farmers Bank and another at Merchants Bank—and you write a check transferring $50 from the Farmers Bank account to the Merchants Bank account. When you open the Merchants Bank account, the $50 shows up as a deposit.

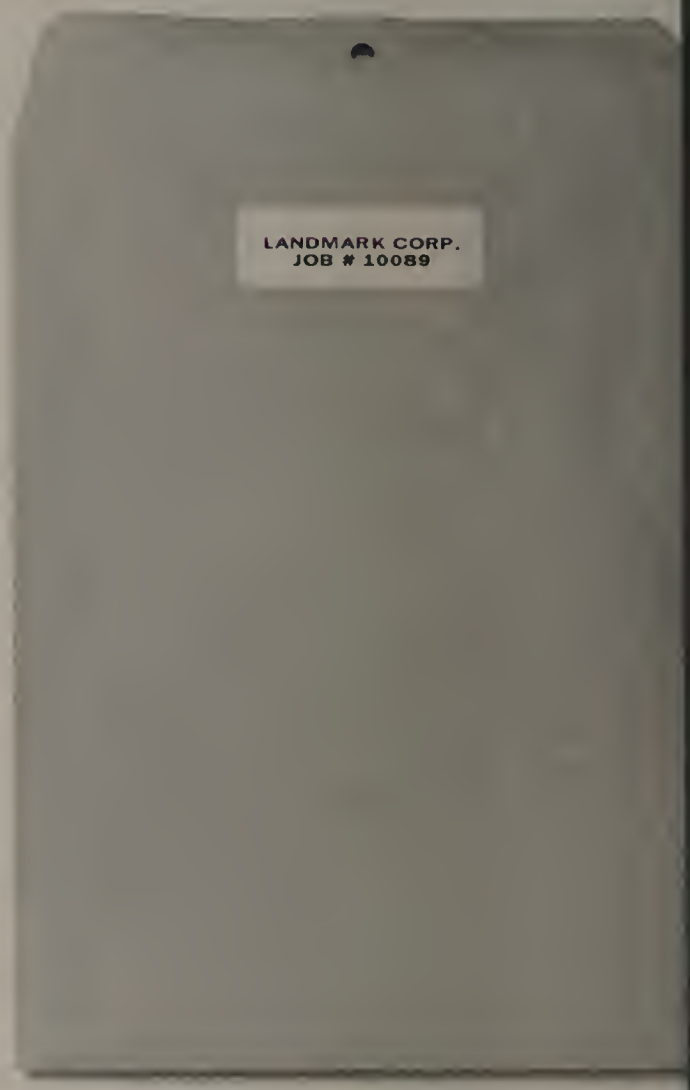
A few weeks later when you're looking at the Merchants Bank screen, you might easily forget the source of this $50 deposit. If you click on the transaction to edit it within the Merchants Bank account,

(continues)

Label printer? What do





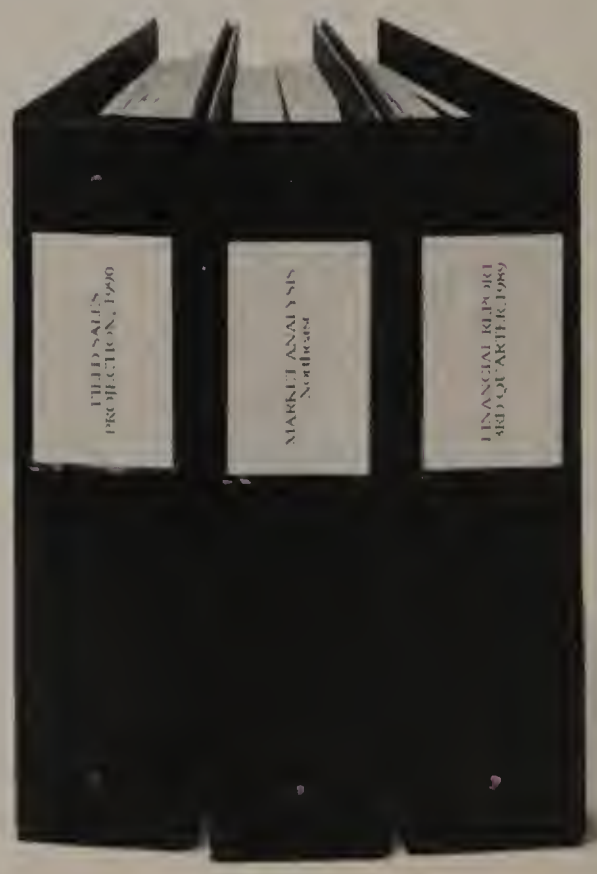














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All or Nothing

MacMoney creates ten data files based on the name you assign when you initiate the program. If you change the name of one data file, you'll have to change all ten, or you won't be able to open any of them. (In this case, you'd have to replace Hogan89 with The Hogan Family in each of the ten files.) Don't change the suffix letters—MMII, MMBD, and so on—and don't remove the space between the name and the suffix.

instead of seeing the transaction on screen for edit, you'll get a warning beep. You can't edit the transaction in the Merchants Bank account because it didn't originate there. To edit the transaction, you'll have to open your Farmers Bank checkbook.

Also, when you're in the Farmers Bank entry screen, if you click on the Farmers Bank account as your check category, you'll get another warning beep. That's because you can't write a check as a deposit to the same checking account. In this case, you could charge it to any account but the Farmers Bank category.

ASSET ACCOUNTS

Normally, when you create a fund account such as a mutual fund, you set it up as an asset account. However, transferring money from an asset account requires entering an adjustment, which can be somewhat complex. In MacMoney, you can set up the fund as a bank account instead. Then, to transfer money to your bank checking account, for example, you merely write a check transferring money from the fund to your bank account.

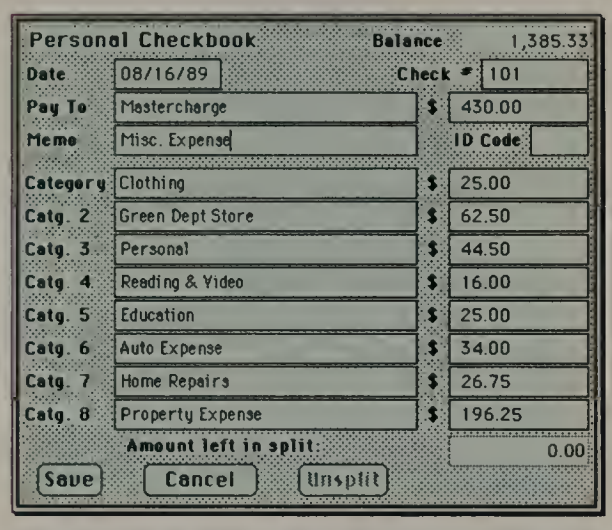
ADDING TRANSACTION CATEGORIES

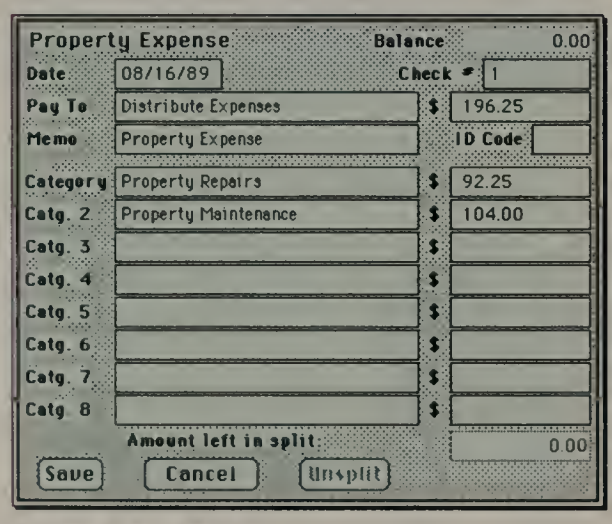
MacMoney allows for up to eight categories per transaction, which should be enough in most cases. But if you need to split transactions among more than eight accounts, you'll be glad to know there is a way to circumvent the limit.

Let's say you want to split a transaction into ten accounts. Just set up a *transfer* account (for example, a checkbook account) and make it the eighth category; this is where you initially charge the expense. Later you can enter an adjustment or a check, moving the money out of the transfer account and putting the appropriate amounts into two separate accounts (see "Going over the Limit").

When you finish, the transfer account should have a zero balance, with the expenses charged to the separate accounts. If the transfer account is not empty, print out a report for that category to find out where the error occurred.

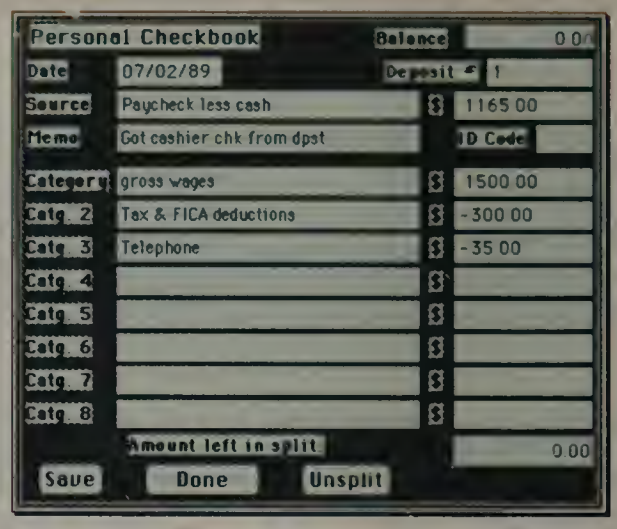
Of course, any subsequent transactions involving those added accounts





Going over the Limit

Here's a case in which I needed to distribute expenses among ten categories, overriding MacMoney's limit of eight categories to a transaction. In the eighth category, I set up Property Expense as a checking account containing a check for $196.25 from my personal checkbook. I then distributed the $196.25 between Property Repairs and Property Maintenance. After saving my distribution, I was left with a zero balance in the Property Expense account. If there had been any balance in the account, either plus or minus, it would mean I'd made an error.



Cash-back Deposit

In this cash-back transaction on a deposit, a payroll check is deposited and a $35 cashier's check is received from the bank to pay a phone bill. After the $35 cashier's check is subtracted, the net deposit is $1165. The transaction is entered on a split personal checkbook deposit screen; the split screen is used when a transaction is charged to more than one category.

would have to be entered in the transfer account and then transferred to the separate accounts just as you did with the original transaction.

TRACKING A STOCK TRANSACTION

MacMoney can be used to track stock transactions, as long as you remember to enter any changes in the value of the stock at regular intervals (probably monthly).

Let's say you buy ten shares of Big Board stock for $50 per share, with a broker's fee of $25. You set up an account category Big Board Stock, as a bank account. You enter the original transaction in the appropriate checkbook account as a check to the broker, putting $500 into the category Big Board Stock and $25 into the Broker Fee category.

You should also set up a Dividend category as an Income account. (If you want to track dividends separately for all your stocks, you can set up separate Income accounts, such as Dividend-Big Board Stock.) You would then deposit each dividend into the checkbook account under the Dividend category.

To track the value of your stock, you would set up an Income account called Stock Gain (or Loss). Each month, you would bring up the Big Board Stock account and enter the change as a deposit (if the stock goes up) or as a withdrawal

(continues)

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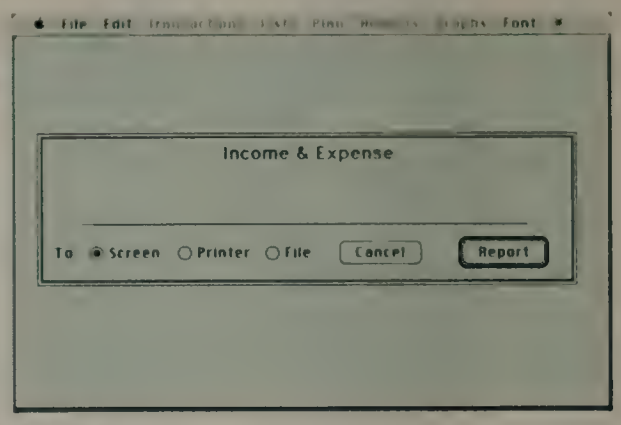
(if the stock goes down), with Stock Gain (or Loss) as the category.

If you sold the stock, you would enter the transaction into the Big Board Stock account as a check to your personal checkbook account; the stock account would zero out, and the cash would be in your checking account. If a broker fee is subtracted from the proceeds, charge it to the Broker Fee category, with the balance of the money going into checking.

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To make a payment on the loan, you write a check from your regular checking account, charging the amount to the category you've chosen (such as Home Equity Loan). If you use the bank account method, the payment reduces your deficit in that account by the amount of payment; if you use a credit card category, the payment reduces your liability on the account by that amount. Just be sure to enter in the Memo section what you're doing, so you will have an audit trail to follow later.



A Full Report

When you print a MacMoney report, don't select Print Window from the File menu or only what's visible on the screen will be printed. To print the entire report, select Printer, not Screen (the default, shown here), as the destination from the opening Report screen. Note that you may choose the font in which you want your report printed from the Font menu that appears in the window.

LOST HELP FILE

Have you recently discovered that MacMoney was suddenly unable to find its Help file? Then you're one of many people who received a Microsoft product update containing a macro INIT called Automac. This INIT tricks MacMoney into looking for its Help file in the System Folder, rather than the MacMoney folder (where it's normally kept). To solve the problem, remove Automac or copy (or move) the MacMoney Help file into the System Folder.

SHARING THE WEALTH

If you've found a tip or shortcut not mentioned here, spread the word to other *Macworld* readers by sending it to *Quick Tips, Macworld*, 501 Second St., San Francisco, CA 94107. Ⓜ

See *Where to Buy* for contact information.

Alan L. Slay is a free-lance writer based in Saint Louis who specializes in financial and accounting software.

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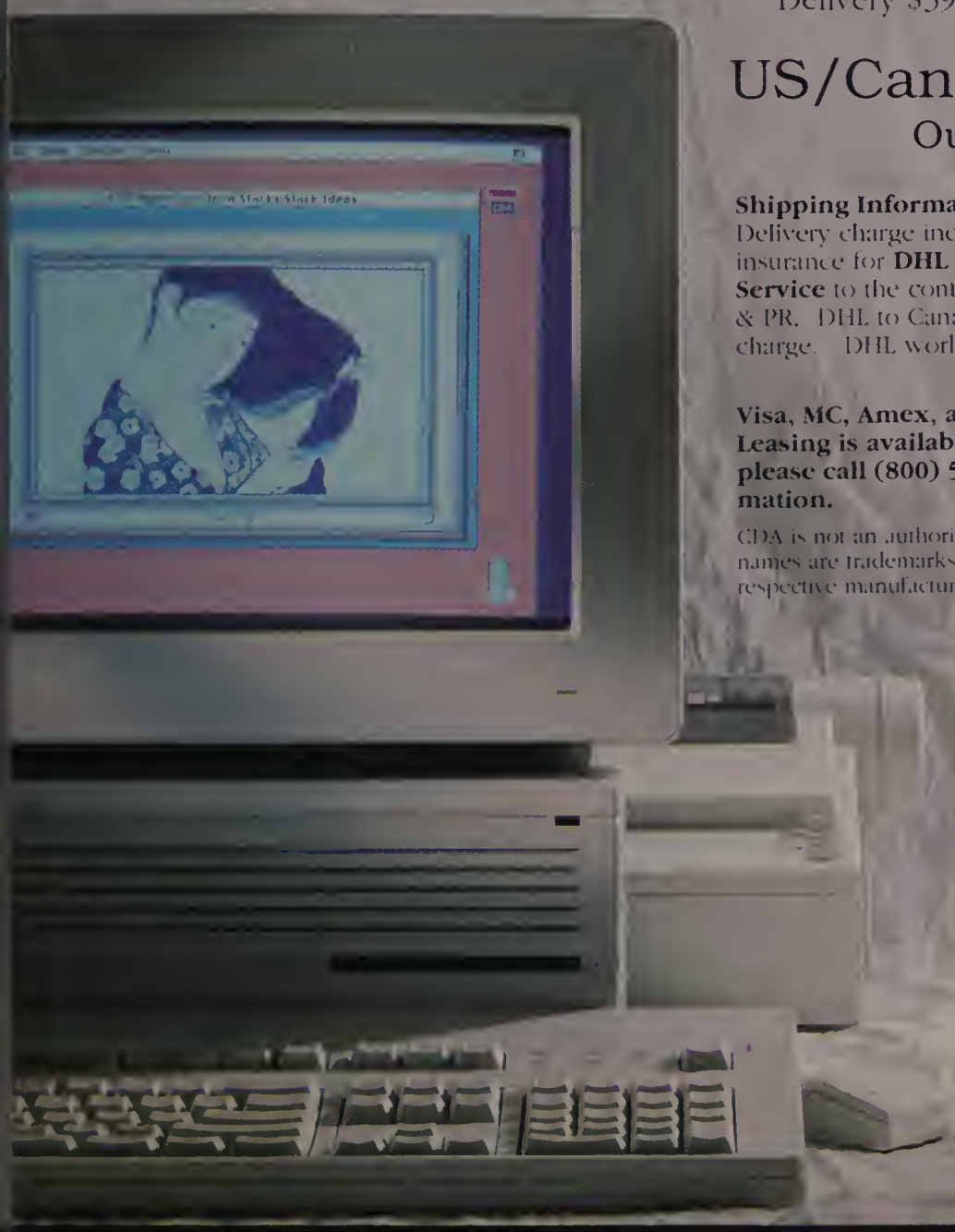
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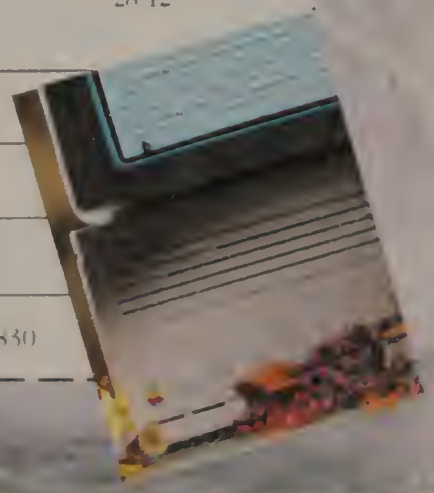
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UPDATES

This list brings you the highlights of software updates recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

AccuText version 1.1 includes support for HP ScanJet Plus and can recognize seven languages in addition to English: French, Spanish, Italian, German, Dutch, Swedish, and Norwegian. Xerox Imaging Systems, 1215 Terra Bella Ave., Mountain View, CA 94043; 415/965-7900. Free if originally purchased before July 1, 1989; $10 if purchased after that date; $995 new.

4th Dimension version 2.0 increases speed of import, index, update, delete, search, sort, and other operations from 5 to 100 times. Automates and simplifies database design and use. Includes a Quick Report editor and executive report generator, as well as more than 350 new features to accelerate the process of designing databases. Adds time and Boolean logic to supplement data storage capabilities. Process of creating reports and labels has been redesigned for novices. Acius, 10351 Bubb Rd., Cupertino, CA 95014; 408/252-4444. Free plus s/h with upgrade manual addendum; $80 plus s/h with full set of manuals; $795 new.

Grafpoint version 2.0 has TCP/IP support, performs complete Tektronix terminal emulation using the Mac interface, has an option for a separate dialog window, supports cut and paste in both graphics and dialog area, and supports any Mac with a 256-color board. This version also has faster throughput than the previous version and includes sizable graphics windows. Grafpoint, 1485 Saratoga Ave., San Jose, CA 95129-4934; 408/446-1919. Free, plus $25 for documentation; $995 new.

Iconia version 7.0 contains a large icon and mask editor with Preview feature, places Tool Set in a separate window, supports edit commands and multiple formats and lets you import icons from any file. MultiFinder-compatible. Seagull Engineering of Sweden, Box 909 S-220 09, Lund, Sweden; 046 12 54 64. Contact dealer for update policy; $125 plus $12 s/h new.

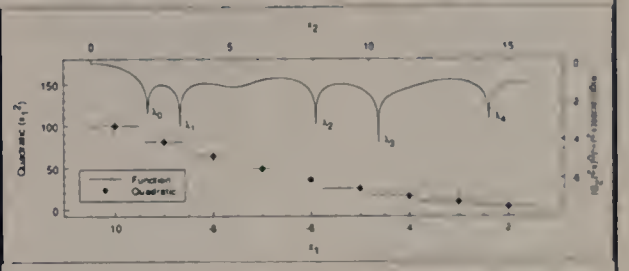
Inspiration version 2.0 is a diagramming and outlining tool that lets you use a variety of symbol shapes, selective text styling, and color. Includes Find and Replace functions to locate and change words or phrases within a diagram. Ceres Software, 2520 S.W. Hamilton St., Portland, OR 97201; 503/245-9011. Free plus $5 s/h; $249 new.

JetLink Express version 1.01 gives full support for gray scales and most major drawing applications. Allows for use with a larger variety of paper sizes, and has a new feature that enables a driver to tell the application the resolution at which it is printing. Includes two new drivers developed for the HP LaserJet printers and compatibles. GDT Softworks, P.O. Box 1865, Point Roberts, WA 98281; 604/291-9121. Free; $149 new.

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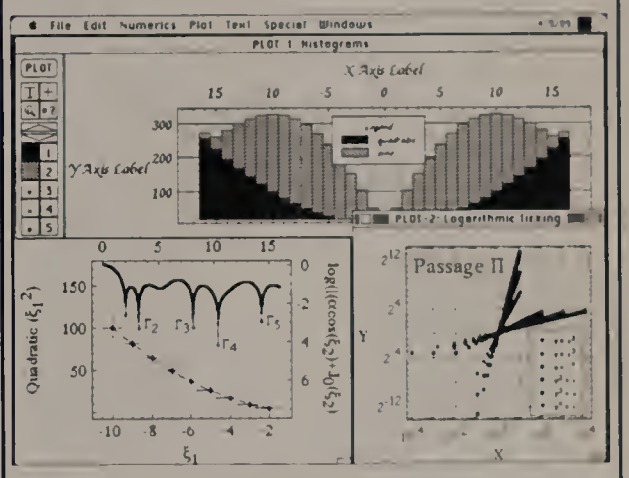
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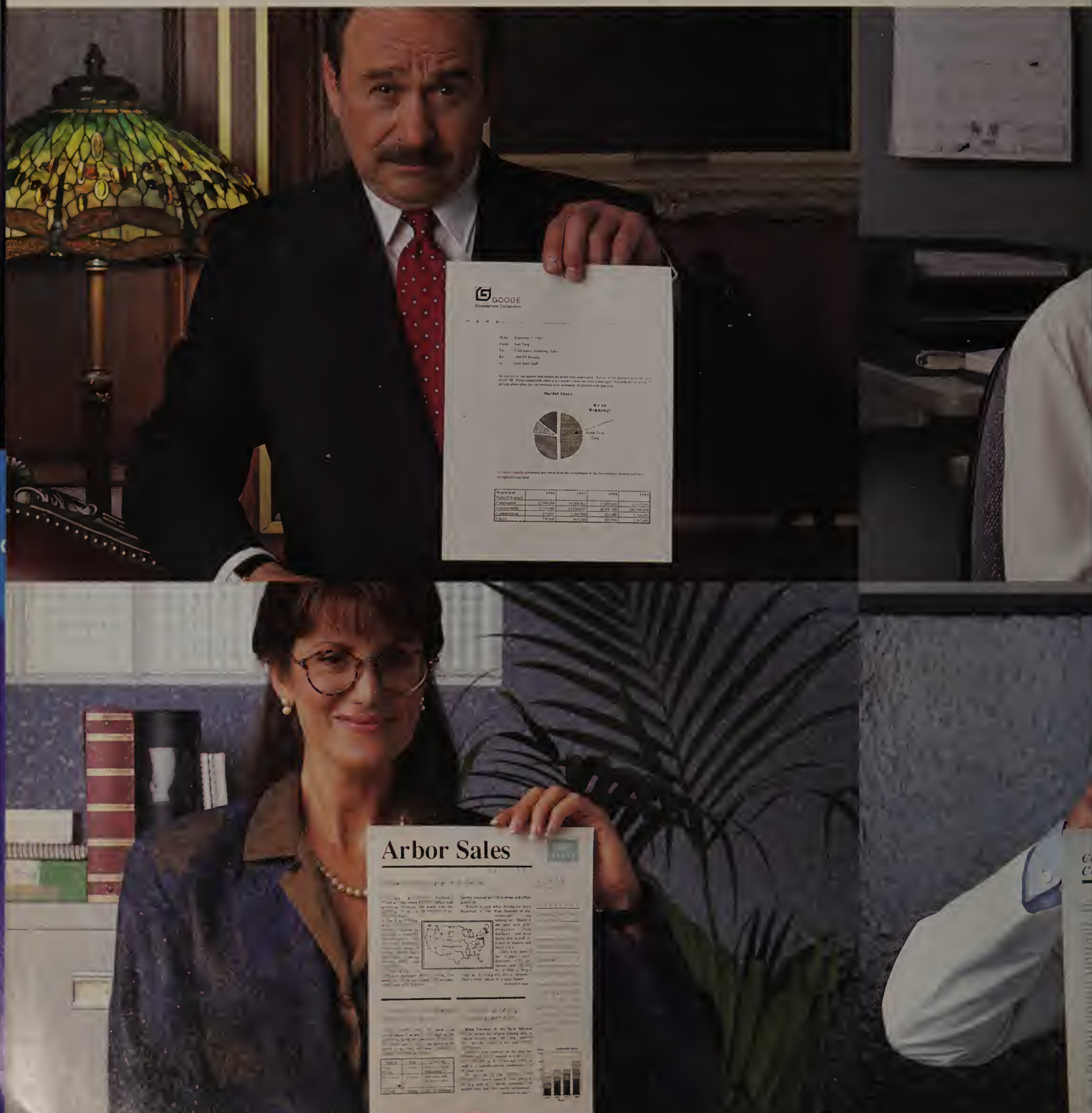
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* See our review in MacWorld July 1988 page 153

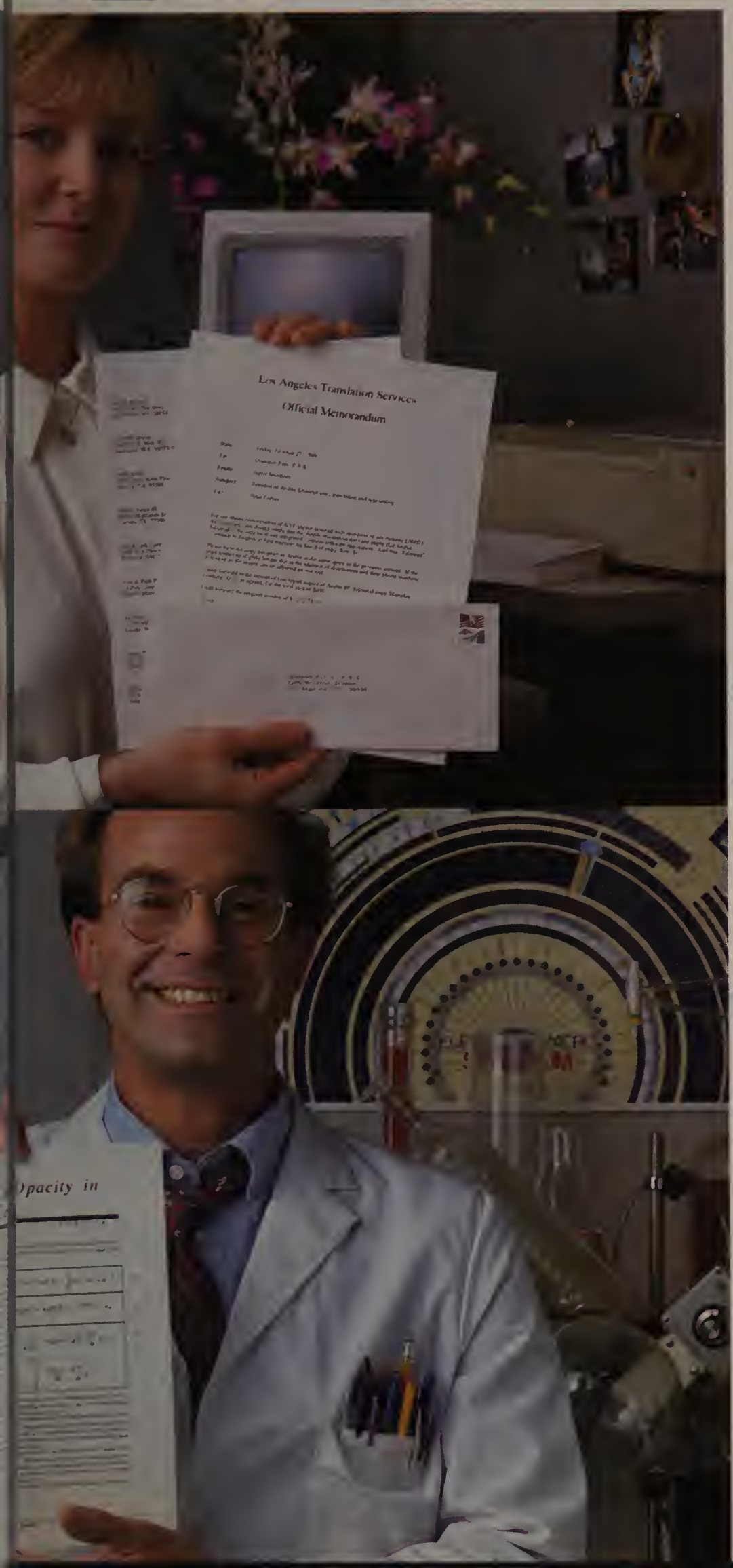
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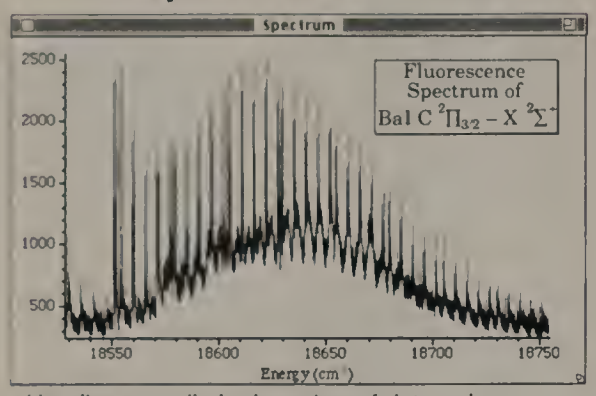
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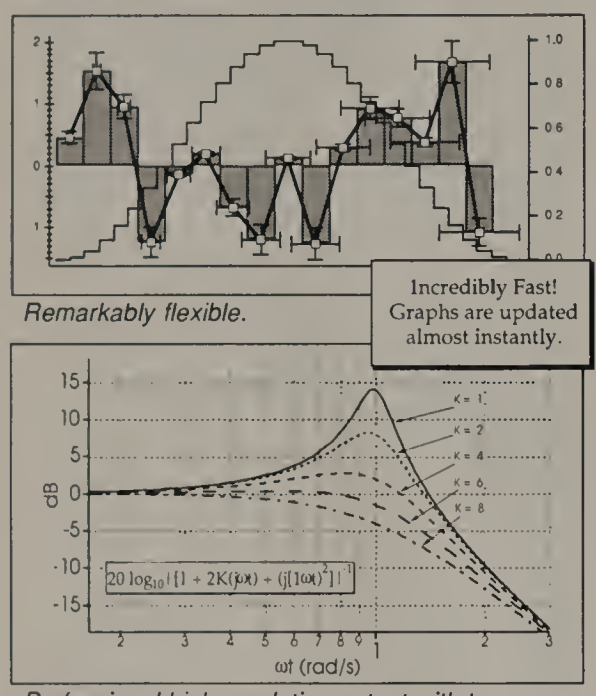
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Macinstor Installer version 2.0 provides automatic reallocation of bad blocks, password-protected and read-only partitions, manual or automount partitioning, full support for A/UX, and CDEV. Changes have also been made to the user interface. Storage Dimensions, 2145 Hamilton Ave., San Jose, CA 95125; 408/879-0300. $25; bundled with all Macinstor products new.

Read-It OCR version 2.1 includes drivers for Dest, Abaton 300S and 300GS, and the Logitech ScanMan scanners. Also includes new type tables designed to work with documents printed using Epson dot-matrix and HP LaserJet printers, and an option that lets you directly open type tables created with the PC version of Read-It OCR. Olduvai, 7520 Red Rd., Ste. A, South Miami, FL 33143; 305/665-4665. $29 plus s/h if purchased before July 31, 1989; free plus master disks if purchased after that date; $495 new.

Shanghai version 2.0 lets players choose from different game options, including solitaire, head-to-head matches against the clock, or multiplayer tournaments. Has an option to automatically alert you when there are no more moves to make. Activision Entertainment, 3885 Bohannon Dr., Menlo Park, CA 94025; 415/329-0800. $13; $29.95 new.

SmartForm Assistant version 1.1 has built-in help messages and choice lists, performs automatic calculations and error checking, and electronically routes and collects forms into sets with like formats. Form data can be exported to standard file formats for use by database and spreadsheet programs. Claris, 5201 Patrick Henry Dr., Santa Clara, CA 95052-8168; 408/987-7000. Free; single-pack $49, ten-pack $399 new.

SmartForm Designer version 1.1 has greater integration with FileMaker database, and contains Collect tool for sorting and exporting records in a batch. Claris, 5201 Patrick Henry Dr., Santa Clara, CA 95052-8168; 408/987-7000. Free; $399 new.

Timbuktu version 3.0 includes ability to transfer files on a local area network. Lets two or more Mac users share screens via AppleTalk networks. Farallon Computing, 2201 Dwight Way, Berkeley, CA 94704; 415/849-2331. $40; $149 new.

Turbosynth version 2.0 includes three new modules: Time Compressor, Noise Oscillator, and Pitch Envelope. Records via the AD IN Analog to Digital Converter, performs harmonic analysis and synthesis, includes basic sample editing tools, and has envelope removal and conversion capabilities. Digidesign, 1360 Willow Rd., #101, Menlo Park, CA 94025; 415/327-8811. $35; $349 new.

Virex version 2.0 includes VirexGuard feature that continuously runs in the background monitoring the system to prevent a virus attack. Also incorporates a diagnostic tool that can be used to detect new or previously unknown viruses. Has improved ability to diagnose. HJC Software, P.O. Box 51816, Durham, NC 27717; 919/490-1277. Free for subscribers and registered owners of prior versions if purchased after July 15, 1989; $15 for all other registered owners; $99.95 new. M

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This listing provides company oddresses ond phone numbers for products mentioned in this issue. Allow several weeks for responses to reoder service cord inquiries. Asterisks indicote vendors who prefer to be contocted directly.

Reader Service

A

701 **Accu-Weather Forecaster** Meta-comet Software, Hartford, CT; 203/223-5911, 800/345-9111.

702 **Adobe Illustrator 88** Adobe Systems, Inc., Mountain View, CA; 415/961-4400, 800/833-6687.

703 **AEC Information Manager** AEC Management Systems, Inc., Sterling, VA; 703/450-1980, 800/346-9413.

* **Alacrity** Jason Osgood. 206/746-0680.

704 **Aldus FreeHand, Aldus PageMaker Color Extension for the Macintosh** Aldus Corp., Seattle, WA; 206/622-5500.

705 **The Ancient Art of War at Sea** Broderbund Software, Inc., San Rafael, CA; 415/492-3200, 800/521-6263.

706 **Anti-Taxin** Mainstay, Agoura Hills, CA; 818/991-6540.

707 **Anti-Virus Kit** 1st Aid Software, Inc., Boston, MA; 617/782-4676, 800/843-3497.

708 **A+ Mouse ADB** Mouse Systems Corp., Fremont, CA; 415/656-1117.

709 **AppleLink Personal Edition** Quantum Computer Services, Vienna, VA; 703/448-8700, 800/227-6364.

710 **Apple Security System** Kensington Microware, Ltd., New York, NY; 212/475-5200, 800/535-4242.

711 **Apple Tape Backup 40SC** Apple Computer, Inc., Cupertino, CA; 408/996-1010.

712 **AppMaker** Bowers Development, Lincoln Center, MA; 617/259-8428.

713 **ArchAccount** Gardner Partnership, Cedar City, UT; 801/586-9494.

714 **ArchiCAD** Graphisoft USA, South San Francisco, CA; 415/266-8720, 800/344-3468.

715 **Architect's BudgetEstimator Combination** Building Pro Software, Reno, NV; 800/346-4694.

716 **Architect's Office** CDG Architects, Tucson, AZ; 602/629-9752.

717 **Architrian II** Gimeor, Inc., Washington, DC; 202/546-8775.

718 **Atelier Interiors and Atelier Structures, Atelier Management and Atelier Finance** Artel Software, Inc., Pawtucket, RI; 401/724-1896, 800/726-7570.

719 **atOnce** Layered, Inc., Boston, MA; 617/242-7700.

720 **AutoCAD** Autodesk, Inc., Sausalito, CA ; 415/331-0356.

B

721 **Bi-Directional Adaptor** Microseeds Publishing, Inc., Tampa, FL; 813/882-8635.

722 **Building Code Analyst** Architectronica, Redondo Beach, CA; 213/376-7054.

C

723 **Calendar Creator** Power Up Software Corp., San Mateo, CA; 415/345-5900, 800/223-1479.

724 **Canvas** Deneba Software, Miami, FL; 305/594-6965.

725 **Capture** Mainstay, Agoura Hills, CA; 818/991-6540.

726 **Chart Interpreter** Time Cycles Research, Waterford, CT; 203/444-6641.

* **Claris CAD** Claris Corp., Mountain View, CA; 408/987-7000.

727 **Clerk of the Works** Samsara, Spring House, PA; 215/628-3565.

728 **Clip Art** Dubl-Click Software, Inc., Chatsworth, CA; 818/349-2758.

729 **The Colony** Mindscape Inc., Northbrook, IL; 312/480-1948.

730 **CompuServe** CompuServe Information Service, Columbus, OH; 614/457-8600.

731 **Cosmic Osmo** Activision Entertainment, Menlo Park, CA; 415/329-0800.

732 **A Country Christmas** B&B Soundworks, San Jose, CA; 408/241-7986.

733 **Courier HST** U.S. Robotics, Skokie, IL; 312/982-5010.

734 **Cricket Paint** Computer Associates International, Inc., San Jose, CA; 800/531-5236.

735 **Custom Trackballs** Kensington Microware, New York, NY; 212/475-5200.

D

736 **DataRescue Diskettes** Polaroid Mag-Media Ltd., Santa Rosa, CA; 707/578-3200.

737 **Dayna SpeedGuard Collision Filter, DaynaTalk** Dayna Communications, Inc., Salt Lake City, UT; 801/531-0203, 800/531-0600.

739 **Design Dimensions** Visual Information Development, Inc., La Puente, CA; 818/918-8834.

740 **DeskPaint & DeskDraw** Zedcor, Inc., Tucson, AZ; 602/881-8101, 800/482-4567.

741 **DirectDigital Tape, DirectTape** Jasmine Technologies, Inc., San Francisco, CA; 415/282-1111.

742 **Discalculator** The Computer Giftware Co., Glendale, CA; 818/500-7857, 800/543-7326.

743 **DMP 61** Houston Instrument, Austin, TX; 512/835-0900, 800/444-3425.

744 **Dreams** Innovative Data Design, Inc., Concord, CA; 415/680-6818.

745 **DynaPerspective** Dynaware Corp., Foster City, CA; 415/349-5700, 800/444-3962.

E

746 **The Electronic Whole Earth Catalog** Broderbund Software, Inc., San Rafael, CA; 415/492-3200, 800/521-6263.

747 **EPS School Administrator's Assistant** Chancery Software, Ltd., Vancouver, B.C., Canada; 604/685-2041.

748 **ExecutivePad** The Computer Giftware Co., Glendale, CA; 818/500-7857, 800/543-7326.

F

749 **Fastback II** Fifth Generation Systems, Inc., Baton Rouge, LA; 504/291-7221, 800/225-2775.

750 **Fee Simple** Nolte Software, San Diego, CA; 619/234-1008.

751 **Fish** Tom & Ed's Bogus Software, Bellevue, WA.

752 **FlashTalk** TOPS, A Sun Microsystems Co., Alameda, CA; 415/769-9669, 800/445-8677.

753 **FlexiCAD** Amiable Technolo-

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gies, Inc., Philadelphia, PA; 215/222-9066.

754 **Flipper** Dolphin Systems Technology, Santa Ana, CA; 714/558-3220.

755 **Frame Mac** Compuneering Inc., Ontario, Canada; 416/738-4601.

756 **FullPaint** Ashton-Tate, Torrance, CA; 213/329-8000, 800/437-4329.

G

757 **Generic CADD** Generic Software, Bothell, WA; 206/487-2233, 800/228-3601.

758 **Giga 1235, Gigapack-Mac** GigaTrend, Inc., Carlsbad, CA; 619/931-9122.

759 **GigaTape** Summus Computer Systems, Houston, TX; 713/492-6611, 800/255-9638.

760 **Gorillas in the Mix** Rykodisc USA, Minneapolis, MN; 612/375-9162.

761 **Gravis ADB MouseStick** Advanced Gravis Computer Technology Ltd., Burnaby, B.C., Canada; 604/434-7274, 800/663-8668.

H

762 **Halls of Montezuma** SSG/Electronic Arts, San Mateo, CA; 415/571-7171, 800/245-4525.

763 **hammerDAT, hammerTape 150** FWB, Inc., San Francisco CA; 415/474-8055.

764 **HeatLoss** Yeoman Technical Software, Jewett City, CT; 203/376-2952.

765 **Hewlett-Packard DeskWriter** Hewlett-Packard, Cupertino, CA; 800/752-0900.

766 **Hidden Agenda** Springboard Software, Minneapolis, MN; 612/944-3915, 800/445-4780.

767 **HiPerformance 60, HiPerformance 150** ProCom Technology, Inc., Costa Mesa, CA; 714/549-9449.

768 **HyperAnimator** Bright Star Technology, Inc., Bellevue, WA; 206/451-3697.

* **HyperComposer** Addison-Wesley Publishing Co., Reading, MA; 617/944-3700.

769 **HyperTape II** GCC Technologies, Waltham, MA; 617/890-0880, 800/634-9737.

I

770 **Impact 60, Impact 150** Everex Systems, Fremont, CA; 415/498-1111, 800/821-0806.

771 **interFACE** Bright Star Technology, Inc., Bellevue, WA; 206/451-3697.

772 **Irwin Models 5040 and 5080** Irwin Products Group, Ann Arbor, MI; 313/930-9132, 800/421-1879.

J

773 **Jetstream** PCPC, Tampa, FL; 813/884-3092.

774 **Just Enough Pascal** Symantec Corp., Cupertino, CA; 408/253-9600.

K

775 **Kodak Datashow 480 Projection Pad** Eastman Kodak Company, Rochester, NY; 716/724-4000.

L

776 **LabelOnce** Multicomp, Inc., Abilene, TX; 915/676-0844, 800/541-4351.

777 **Large Screen Anti-Glare Filter** Kensington Microware, Ltd., New York, NY; 212/475-5200, 800/535-4242.

M

778 **MacBrava Facilities** Schlumberger Technologies, Ann Arbor, MI; 800/366-0060.

779 **Mac Cazy** Future Studio, Los Angeles, CA; 213/660-0620.

780 **Macinware SE Extended Carrying Case** I/O Design, Inc., Exton, PA; 215/524-7277, 800/241-2122.

781 **MacLink Plus PC** DataViz, Inc., Trumbull, CT; 203/268-0030.

782 **MacMoney** Survivor Software Ltd., Inglewood, CA; 213/410-9527.

783 **MacPaint** Claris Corp., Santa Clara, CA; 408/987-7000, 800/334-3535.

784 **MacPerspective** Knick Drafting, Satellite Beach, FL; 407/777-0275.

785 **MacRecorder** Farallon Computing, Berkeley, CA; 415/849-2331.

786 **MacScuba** Paradise Software Corp., Phoenix, AZ; 602/893-8324.

787 **MacTape/SCSI-4, MacTape/SCSI-5, MacTape/SCSI-8** Blackhole Technology, Winchester, MA; 617/721-7690, 800/227-1688.

788 **MacTilt** Ergotron, Inc., Eagan, MN; 612/452-8135, 800/888-8458.

789 **MagicTape 60, MagicTape 150** MacProducts USA, Austin, TX; 512/343-9441, 800/622-3475.

790 **The Manhole** Mediagenic/Activision, Menlo Park, CA; 415/329-0800.

791 **Master Outline Spec** Yeoman Technical Software, Jewett City, CT; 203/376-2952.

792 **MasterSpec AIA** American Institute of Architects, Washington, DC; 202/626-7300, 800/424-5080.

793 **MaxStream 60, MaxStream 150** Archive Corp., Costa Mesa, CA; 714/966-5589, 800/237-4929.

794 **MaynStream 60 for the Macintash, MaynStream 150 for the Macintash, MaynStream 2200 HS for the Macintash** Maynard Electronics, Inc., Casselberry, FL; 407/263-3500, 800/821-8782.

795 **MicraLeague Baseball** MicroLeague Sports Association, Newark, DE; 302/368-9990.

796 **MicraStation Mac** Intergraph, Huntsville, AL; 205/772-2760, 800/345-0218, 800/345-4856 outside Alabama.

797 **MicraStore Disk Wallet** MicroStore, Le Sueur, MN; 612/665-3284, 800/962-8885.

798 **MiniCad+** Graphsoft, Inc., Ellicott City, MD; 301/461-9488.

799 **Ministreamer** Qualstar, Chatsworth, CA; 818/882-5822.

800 **ModelShop** Paracomp, Inc., San Francisco, CA; 415/543-3848.

801 **The Moonlight Artworks Holiday Set** Hired Hand Design, Long Beach, CA; 213/429-2936.

802 **MT-60, MT-150, MT-320** MicroNet Technology, Inc., Irvine, CA; 714/837-6033.

803 **Multi-Ad Creator** Multi-Ad Services, Inc., Peoria, IL; 309/692-1530, 800/447-1950.

804 **MultiColor 6248** Agfa Matrix, Orangeburg, NY; 914/365-0190.

805 **My First Book of Poetry and The Dream Called Storm** B&B Soundworks, San Jose, CA; 408/241-7986.

N

806 **Nemesis Go Master** Toyoga, Inc., Lexington, MA; 617/861-0488, 800/486-9642.

807 **NetTrek** Premier Technology, Inc., San Francisco, CA; 415/882-7766.

* **Network DiskFit** SuperMac Technology, Mountain View, CA; 415/964-8884.

808 **NT60, NT150** Microtech International, Inc., East Haven, CT; 203/468-6223, 800/626-4276.

809 **NuPaint** NuEquation, Inc., Richardson, TX; 214/699-7747.

O

810 **150t** Maxcess, Philadelphia, PA; 215/386-2208, 800/356-2892.

811 **Overlays A.M.S.** Firstside Studios, Pittsburgh, PA; 412/422-3888.

P

812 **PalmTop Link for the Macintash** Traveling Software, Inc., Bothell, WA; 206/483-8088, 800/662-2652.

813 **PC Laser 6000/PS** Ricoh Corp., West Caldwell, NJ; 201/882-2000.

814 **PEGASYS II** IGC Technology, San Francisco, CA; 415/945-7300.

815 **Perspective for Architects** First Logistics, Inc., Woodside, NY; 718/397-5927.

816 **The Phrase Thesaurus** L'Intelligence Active Software, Macomb, IL; 309/833-5959, 800/344-0571.

817 **Pirates** MicroProse, Hunt Valley, MD; 301/771-1151, 800/867-1151.

* **PixelPaint Professional** SuperMac

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Technology, Mountain View, CA, 415/964-8884.

818 **Portable Pack** Farallon Computing, Berkeley, CA; 415/849-2331.

819 **PowerDraw** Engineered Software, Greensboro, NC; 919/299-4843.

• **PowerPaint** Microsoft Corp., Redmond, WA; 206/882-8080, 800/426-9400.

820 **Professional CAD Symbol Library** Advanced System Design, Evergreen, CO; 303/674-2222.

821 **Prototyper** SmethersBarnes, Portland, OR; 503/274-2800, 800/237-3611.

822 **The Puzzle Gallery: At the Carnival** Electronic Arts, San Mateo, CA; 415/571-7171, 800/245-4525.

Q

823 **QMS ColorScript 100 Model 30** QMS, Inc., Mobile, AL; 205/633-4300, 800/631-2692.

824 **QT-Mac40, QT-Mac80, QT-Mac150** Tecmar, a subsidiary of Rexon, Inc., Solan, OH; 216/349-1009, 800/624-8560.

• **QuickBASIC** Microsoft Corp., Redmond, WA; 206/882-8080, 800/426-9400.

825 **QuickDex** Casady & Greene, Inc., Carmel, CA; 408/624-8716, 800/331-4321.

826 **QuicKeys** CE Software, Inc., West Des Moines, IA; 515/224-1995.

R

827 **RamSnap** Dove Computer Corp., Wilmington, NC; 919/763-7918, 800/622-7627.

828 **Read-It** Olduvai Corp., South Miami, FL; 305/665-4665, 800/822-0772.

829 **Rendezvous** PMC Telesystems, Inc., Vancouver, B.C., Canada; 604/255-9949.

830 **Retrospect** Dantz Development Corp., Berkeley, CA; 415/849-0293.

S

831 **SAM** Symantec Corp., Cupertino, CA; 408/253-9600.

832 **SA150, SA1250, SA2300** Racet Computes, Ltd., La Brea, CA; 714/579-1725.

833 **Service Industry Accounting** Brown-Wagh Publishing, Los Gatos, CA; 408/395-3838.

834 **Shanghai** Activision, Menlo Park, CA; 415/329-0800.

835 **Shāgun** Infocom, Inc., Menlo Park, CA; 415/329-0800.

836 **SimCity** Maxis Software, Moraga, CA; 415/376-6434.

837 **SimpleSpan and BackSpan** Arch Software, Cincinnati, OH; 513/681-1642.

838 **60MB Tape Plus, 150MB Tape Plus** Relax Technology, Union City, CA; 415/471-6112.

839 **Smart Art** Emerald City Software, Inc., Menlo Park, CA; 415/324-8080.

840 **Snap** Forthought, Sunset, SC; 803/878-7484.

841 **SnapJat** Trillium Software, Lombard, IL; 312/916-9360.

842 **SpaceMaker** SketchTech, Minneapolis, MN; 612/379-1435.

• **Specifications** Guidelines, Orinda, CA; 415/254-9393, 800/634-7779.

843 **StarDrive 60TX, StarDrive 150TX** Ruby Systems, Inc., Mountain View, CA; 415/967-1187, 800/888-1668.

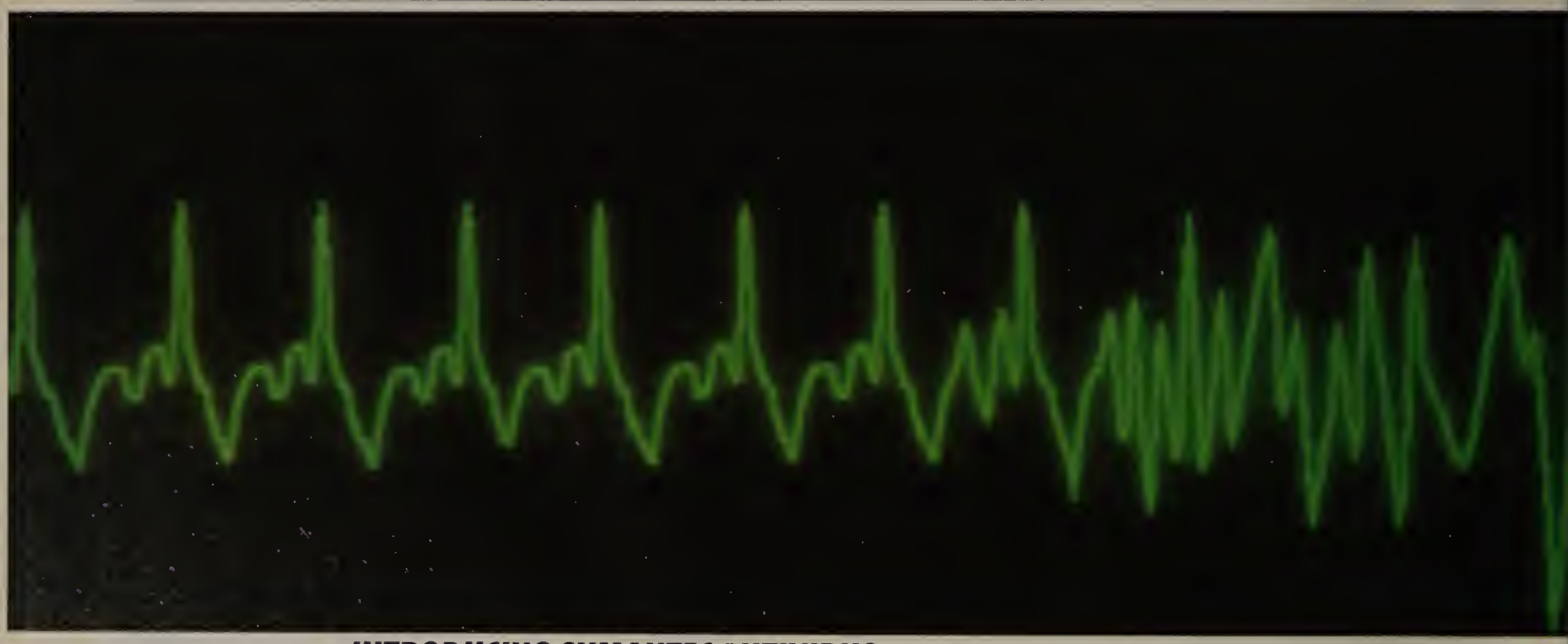
844 **StrataVision 3d** Strata, Inc., St. George, UT; 801/628-5218.

845 **StrucLumber and StrucSteel** Yeoman Technical Software, Jewett City, CT; 203/376-2952.

846 **Studio/1** Electronic Arts, San Mateo, CA; 415/571-7171, 800/245-4525.

847 **SUM II** Symantec Corp., Cupertino, CA; 408/253-9600.

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ware, Woodside, CA; 415/851-4484.

- **SuperPaint, Super 3D** Silicon Beach Software, Inc., San Diego, CA; 619/695-6956.

849 **SX40** Braemar Corp., Burnsville, MN; 612/890-5135.

850 **Synchronicity** Visionary Software, Portland, OR; 503/246-6200, 800/877-1832.

T

851 **TapeCrate 60, TapeCrate 155** Crate Technology, North Hollywood, CA; 818/766-4001.

852 **Tape 60, Tape 150** CMS Enhancements, Tustin, CA; 714/259-9555.

853 **Tempo II** Affinity Microsystems, Ltd., Boulder, CO; 303/442-4840, 800/367-6771.

854 **TextPert** CTA, Inc., New York, NY; 212/759-6201.

855 **TG-4000** Tallgrass Technologies Corp., Overland Park, KS; 913/492-6002, 800/825-4727.

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856 **Think's Lightspeed C, Think's Lightspeed Pascal** Symantec Corp., Cupertino, CA; 408/253-9600.

857 **THS-2200** Tecmar, Inc., Solan, OH; 216/349-1009.

858 **Timbuktu Remote** Farallon Computing, Berkeley, CA; 415/849-2331.

859 **Time Is Money** Collier Software, Austin, TX; 512/476-1110.

860 **Timeslips III** North Edge Software, Essex, MA; 508/468-7358, 800/338-5314.

861 **Tricks of the HyperCard Masters: The Stacks** Heizer Software, Pleasant Hill, CA; 415/943-7667.

862 **TurboBridge** Nuvotech, Inc., Sausalito, CA; 415/331-7815.

863 **Turbo Mouse ADB** Kensington Microware, New York, NY; 212/475-5200, 800/535-4242.

864 **2Gig** Genius, Inc., Studio City, CA; 818/905-8866.

865 **Tyler** Matchups, Medford, MA; 617/395-4190

Reader Service

U

866 **Ultimate Music Box** Product Concepts, West Conshohocken, PA; 215/828-1826.

V

867 **VersaCAD** VersaCAD Corp., Huntington Beach, CA; 714/960-7720.

868 **Virex** HJC Software, Inc., Durham, NC; 919/490-1277.

W

- **The Waite Group's Tricks of the HyperCard Masters** Hayden Books Division of Howard W. Sams & Co., Indianapolis, IN; 317/298-5400, 800/257-5755.

869 **WetPaint Special Occasions Clip Art** Dubl-Click Software, Inc., Chatsworth, CA; 818/349-2758.

870 **Wizard Electronic Organizer** Sharp Corp., Mahwah, NJ; 201/529-9500, 800/526-0264

871 **WordMaker** New Horizons Software, Austin, TX; 512/328-6650

872 **WristMac** Microseeds Publishing, Tampa, FL; 813/882-8635.

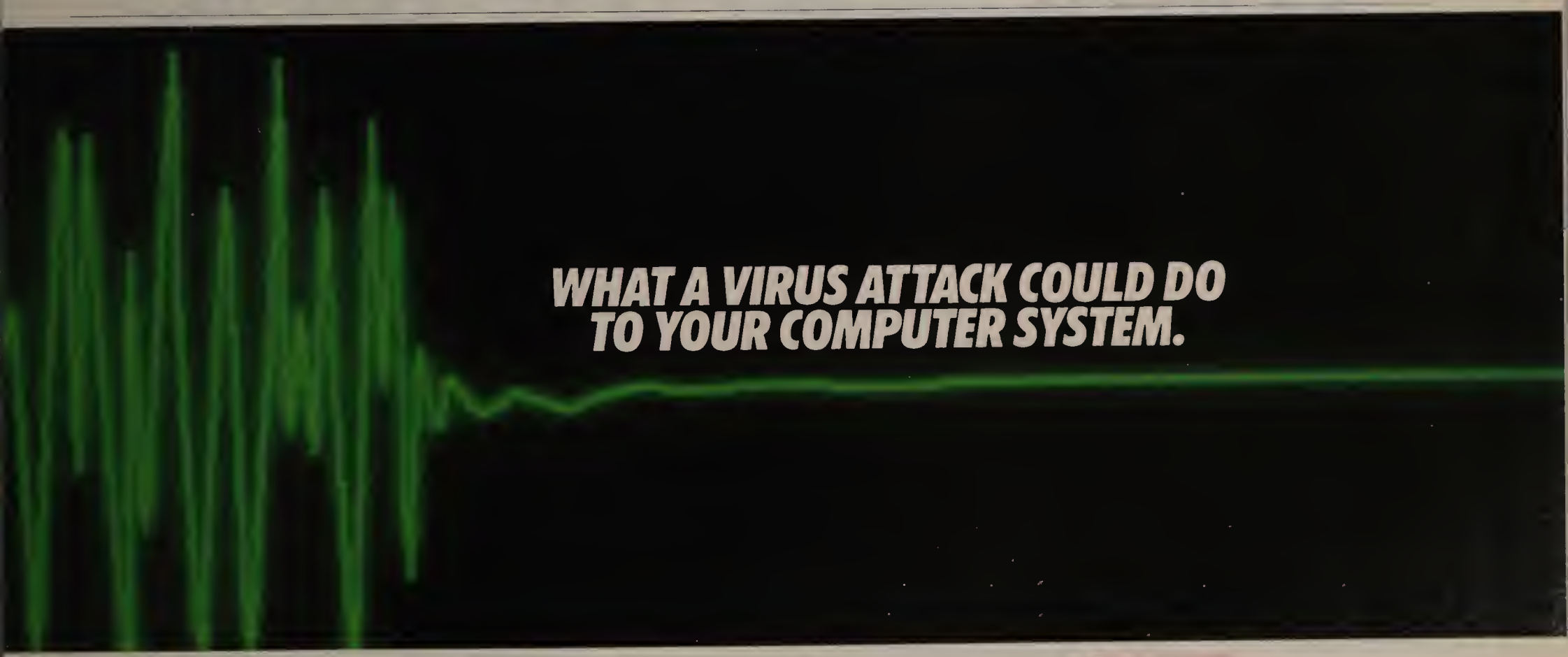
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873 **ZBASIC** Zedcor, Tucson, AZ; 602/881-8101, 800/482-4567.

874 **Zing** Enabling Technologies, Chicago, IL; 312/427-0386, 800/544-0629.

875 **Zork Zero** Mediagenic Activision, Menlo Park, CA; 415/329-0800. ■

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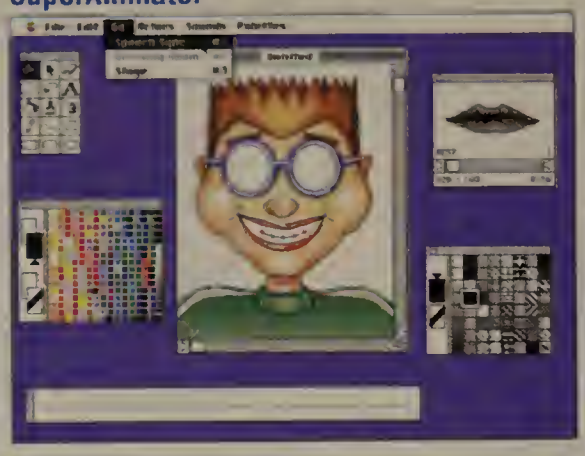
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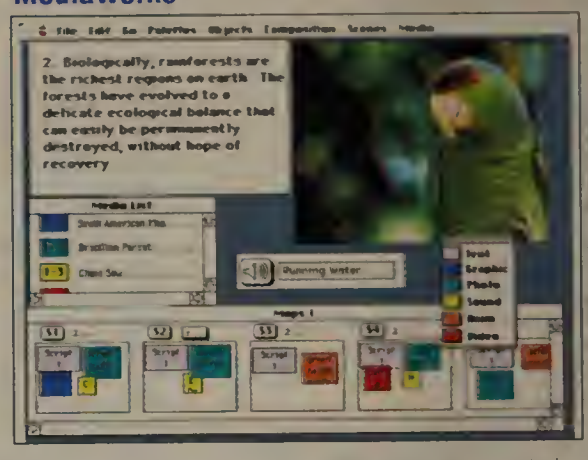
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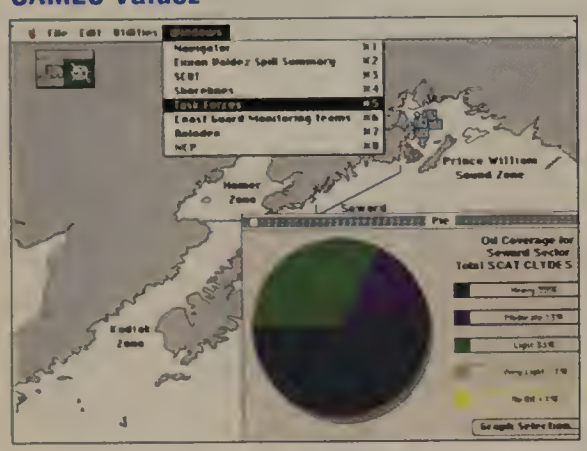
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This multimedia composition environment was created as an Apple Classroom of Tomorrow project to allow 12-year-olds to create their own educational applications by combining information from a variety of sources.

CAMEO Valdez



Concept and Graphics: National Oceanographic and Atmospheric Administration and Geowest Systems. Programming: Peter C. Honebein

NOAA and the U.S. Coast Guard monitored the Exxon Valdez oil spill cleanup and conducted daily briefings using this interactive information system that combines maps, graphs and databases.

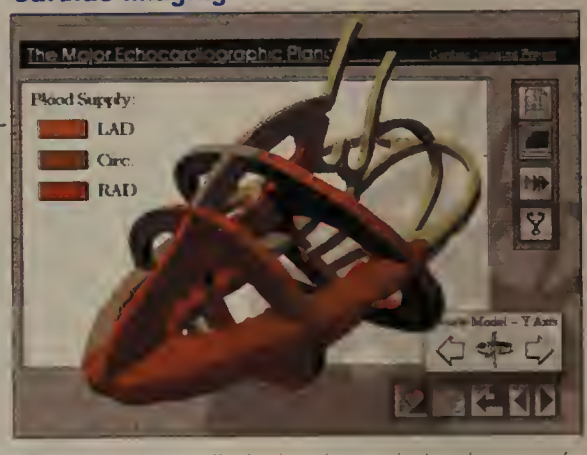
The "Guernica" Project©



The Guernica Project creative team: Robert Abel, Allen DeBevoise, Jonathan Gibson, Jerry Hesseth, Eric Martin, Morgan Newman

This stunning graphical interface is the interactive front end to a multimedia database related to Picasso's famous painting. Starting from *Guernica*, users can explore nearly any path of association imaginable.

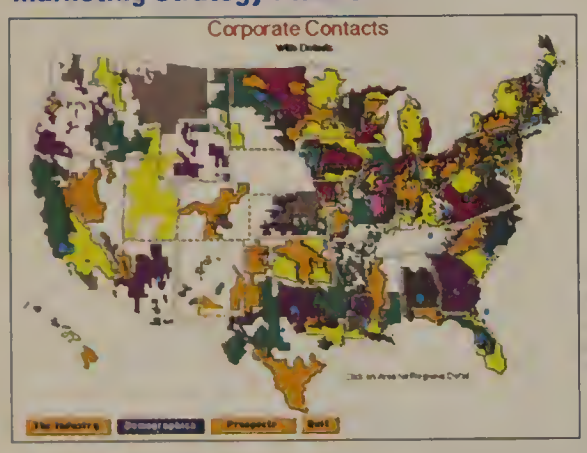
Cardiac Imaging



C. Carl Jaffe, MD & Patrick J. Lynch, MS, Yale University School of Medicine

This interactive medical education project makes use of color graphics, interactive video, digitized sound and images created in Super 3D™ to teach residents and clinical staff at Yale University School of Medicine.

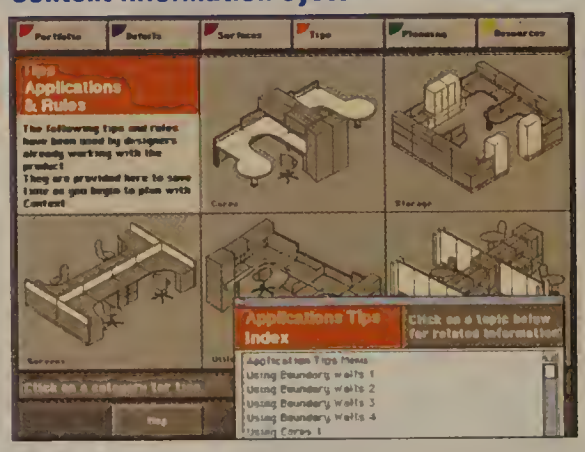
Marketing Strategy Planner



The HyperMedia Group

This hypermedia information system was designed for boardroom presentations and strategic analysis. By clicking on the graphics, speakers can pull up relevant data and analyze it quickly in response to questions.

Context Information System



Creative Interactive Media

Steelcase Furniture uses this interactive multimedia presentation and electronic catalog to present their new line of modular office furniture, "Context." It incorporates Super 3D™ models and animations.

Inigo At Home



Amanda Goodenough – Amanda Stories™

Inigo achieved fame in the HyperCard® story stack entitled, "Inigo Gets Out." Author Amanda Goodenough easily converted her charming character to SuperCard and colored his world.

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POWERDrive	80	28ms	$588

All units use autoparking Seagate hard drives and are factory-tested and pre-formatted for hassle-free setup. Each steel external case comes complete with power supply, cabling, partitioning software and a comprehensive reference manual.

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40 Mb	Quantum	19ms	$ 449
80 Mb	Quantum	19ms	$ 695
105Mb	Quantum	19ms	$ 799

INTERNAL KITS FOR MAC II ONLY

80 Mb	Seagate	28ms	$ 499
160Mb	Micropolis	16ms	$1095
320Mb	Micropolis	16ms	$1695
600Mb	Micropolis	16ms	$2595

Internal kits come complete with a pre-formatted, pre-tested hard drive, formatting & partitioning software, mounting hardware, cabling and How-To manual.



External drives include a pre-formatted, pre-tested hard drive, Uni-Mac external case, power supply, cabling, reference manual and formatting & partitioning software.

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40Mb	Quantum	19ms	$ 549
80Mb	Quantum	19ms	$ 799
105Mb	Quantum	19ms	$ 899
160Mb	Micropolis	16ms	$1145
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Prices are good through December 1989

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	Reg. Price	Sale Price
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Caché Systems 20 *65ms*	$549.	**$429.**
CMS Enhancements 20 *32ms*	$549.	**$429.**
Cutting Edge 20 *65ms*	$529.	**$419.**
MacBEST 20 *32ms*	$499.	**$429.**
30 Megabyte		
Caché Systems 30 *28ms*	$559.	**$489.**
CMS Enhancements 30 *32ms*	$589.	**$489.**
Cutting Edge 32 *30ms*	$579.	**$484.**
MacBEST 30 *28ms*	$549.	**$499.**



Caché Systems

"Caché Systems 150 megabyte tape unit provides the user with such features as file by file and mirror backups of your hard disk drive. Unit comes complete with cables and one tape cartridge." An unbelievable price of only $799.00 this month!

40 Megabyte		
Caché Systems 45 *28ms*	$629.	**$549.**
CMS Enhancements 45 *32ms*	$649.	**$589.**
Cutting Edge 47 *30ms*	$649.	**$539.**
MacBEST 40 *28ms*	$599.	**$569.**
Quantum 40* *19ms*	$699.	**$579.**
60 Megabyte		
Caché Systems 60 *28ms*	$729.	**$579.**
CMS Enhancements 60 *40ms*	$749.	**$649.**
Cutting Edge 60 *28ms*	$699.	**$599.**
MacBEST 60 *28ms*	$729.	**$649.**
80 Megabyte		
Caché Systems 80 *28ms*	$849.	**$679.**
CMS Enhancement 81 *28ms*	$899.	**$779.**
Cutting Edge 85 *28ms*	$725.	**$699.**
MacBEST 80 *28ms*	$849.	**$749.**
Quantum 80* *19ms*	$949.	**$799.**
100 Megabyte		
MacBEST 105 *25ms*	$989.	**$939.**
Quantum 105* *19ms*	$1,099.	**$899.**
120-180 Megabyte		
Caché Systems 150 *16ms*	$1,499.	**$1,299.**
Caché Systems 150 150 Tape *16ms*	$2,499.	**$2,159.**
CMS Enhancements 170 *18ms*	$1,799.	**$1,549.**
MacBEST 180 *18ms*	$1,749.	**$1,659.**
300-600 Megabyte		
Imprimis - CDC 300 *16ms*	$2,499.	**$2,099.**
Imprimis - CDC 300 Wren Runner *10.7ms*	$2,999.	**$2,649.**
Imprimis - CDC 600 *16ms*	$3,399.	**$2,799.**
CMS Enhancements PD 300 *16ms*	$2,349.	**$2,195.**
CMS Enhancements PD 600 *16ms*	$3,699.	**$3,499.**
MacBEST 300 *16ms*	$2,399.	**$2,179.**

***Quantum Drives Have a Two Year Warranty!**

SE, SE30 & IIcx, IIci Internals

30 Megabyte		
Caché Systems 30 *28ms*	$425.	**$375.**
CMS Enhancements Pro 30 *38ms*	$479.	**$399.**
Cutting Edge 32 *30ms*	$479.	**$395.**
MacBEST 30 *28ms*	$449.	**$399.**
40 Megabyte		
Caché Systems 45 *28ms*	$499.	**$449.**
CMS Enhancements Pro 45 *32ms*	$569.	**$469.**
Cutting Edge 47 *30ms*	$529.	**$444.**
MacBEST 45 *28ms*	$499.	**$465.**
Quantum 40* *19ms*	$599.	**$479.**
80 Megabyte		
Quantum 80* *19ms*	$889.	**$699.**
100-210 Megabyte		
MacBEST 105 *25ms*	$949.	**$859.**
Quantum 105* *19ms*	$999.	**$799.**

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MacBEST Hard Disk Drives by Osicom

MacLand carries the full line of quality drives made by Osicom. All drives are complete with cables, software and a manufacturers one year warranty.

Mac II & IIX Internals

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CMS Enhancements Pro 45 *32ms*	$569.	**$469.**



CMS Hard Disk Drives

Hard disk drives, tape back ups, removable hard drives, high capacity drives, CMS has them all and we carry their full line.

Cutting Edge 47 *30ms*	$529.	**$444.**
MacBEST 45 *28ms*	$499.	**$465.**
Quantum 40* *19ms*	$599.	**$479.**
60 Megabyte		
Caché Systems 60 *28ms*	$639.	**$499.**
CMS Enhancements Pro 60 *40ms*	$649.	**$579.**
Cutting Edge 60 *28ms*	$679.	**$489.**
MacBEST 60 *28ms*	$629.	**$549.**
80 Megabyte		
Caché Systems 80 *28ms*	$729.	**$575.**
CMS Enhancements Pro 80 *28ms*	$749.	**$669.**
Cutting Edge 80 *28ms*	$689.	**$599.**
MacBEST 80 *28ms*	$749.	**$679.**
Quantum 80* *19ms*	$889.	**$699.**
100 Megabyte		
MacBEST 105 *25ms*	$949.	**$859.**
Quantum 105* *19ms*	$999.	**$799.**
120-210 Megabyte		
Caché Systems 150 *16ms*	$1,429.	**$1,199.**
CMS Enhancements PI 170 *16ms*	$1,699.	**$1,499.**
MacBEST 150 *17ms*	$1,499.	**$1,279.**
MacBEST 180 *18ms*	$1,649.	**$1,559.**
300-600 Megabyte		
CMS Enhancements PI 300 *16ms*	$2,399.	**$2,195.**
MacBEST 300 *17ms*	$1,999.	**$1,899.**
Imprimis - CDC 300 *16ms*	$2,349.	**$1,999.**
Imprimis - CDC 300 Wren Runner *10.7ms*	$2,649.	**$2,499.**
Imprimis - CDC 600 *16ms*	$2,949.	**$2,699.**
CMS Enhancements PI 600 *16ms*	$3,599.	**$3,499.**
MacBEST 600 *16ms*	$3,599.	**$2,799.**

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Industry leading Quantum quality, dependability and fast access speeds at affordable prices. Backed by our *Two Year Warranty*, all Quantum drives come complete with cables and software.

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44 Megabyte Removables		
CMS Enhancements 44 *25ms*	$1,299.	**$849.**
Cutting Edge 44 *25ms*	$1,149.	**$939.**
60-150 Megabyte Tape Back-Ups		
Caché 150	$1,199.	**$799.**
CMS Enhancements 60	$749.	**$649.**
CMS Enhancements 150	$999.	**$849.**
SyQuest Removable Cartridges		
(Will fit *Any* 44 Removable Drive)	$119.	**$94.**

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General Computer		
Personal LaserWriter	$1,699.	**$1,549.**
Qume		
Crystal Print Publisher	$3,299.	**$2,949.**
ScriptTEN Postscript Printer	$3,499.	**$2,999.**

Monitors

E-Machines Big Picture Plus/SE	$1,399.	**$1,299.**
E-Machines Z-21 SE	$1,999.	**$1,789.**
E-Machines Z-21 SE30/II	$2,099.	**$1,879.**
E-Machines Z-21 IQ Grayscale	$2,799.	**$2,589.**
E-Machines T-16 Color	$2,999.	**$2,829.**
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Dove computers MacSnap line offers a variety for all models from a 512 on up. Dove's Marathon Accelerators are available for the SEII and IIx.

Magnavox 14" Color Mac II	$599.	**$549.**
RasterOps 19" Monochrome SE	$1,599.	**$1,429.**
RasterOps 19" Monochrome II	$1,399.	**$1,199.**
RasterOps 16" 108 Color	$3,499.	**$3,229.**
RasterOps 19" 108 Color	$4,299.	**$4,099.**
RasterOps 16" 108 SE30 Color	$3,869.	**$3,499.**
RasterOps 19" 108 SE30 Color	$4,495.	**$4,379.**
RasterOps 108 Color Board	$1,599.	**$1,339.**
RasterOps 264 Color Board	$999.	**$699.**
Samsung 15" Full Page Monitor & Card	$895.	**$589.**
Sony Multiscan 1302	$999.	**$679.**

Accelerator Boards

MacSprint II Cache Board	$299.	**$219.**
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MaraThon 020 MSE 2 (1 Meg)	$779.	**$707.**
MaraThon 020 MSE 3 (Math Chip)	$649.	**$589.**
MaraThon 020 MSE 4 (1 Meg/Math Chip)	$999.	**$884.**
MaraThon 030 Accelerator	$1,099.	**$944.**
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MacSnap 524E	$219.	**$179.**
MacSnap 524S	$279.	**$235.**
MacSnap 548	$489.	**$424.**
MacSnap 548E	$479.	**$413.**
MacSnap 548S	$529.	**$472.**
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Abaton 300/GS	$1,699.	**$1,475.**
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Microtek MSF 300GS	$1,699.	**$1,599.**
Microtek MSF 400GS	$3,299.	**$2,959.**
Microtek MSF 300Z - Color	$2,495.	**$1,949.**



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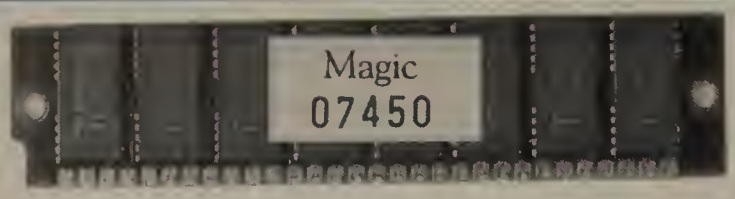
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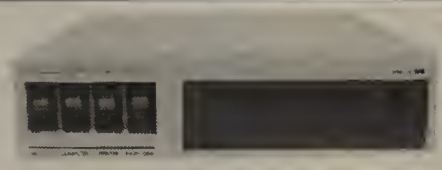
19" B&W Monitor - 2 Page Display. 72 dpi, 78 hz.	
Includes card for +, SE, SE/30, II, IIx, IIcx	$999
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Quantum 105	$889	$979
45 megabyte	$519	$649
45 mb Removable		$999
45 mb Cartridges, ea		$95
60 megabyte	$599	$699
80 megabyte	$699	$799

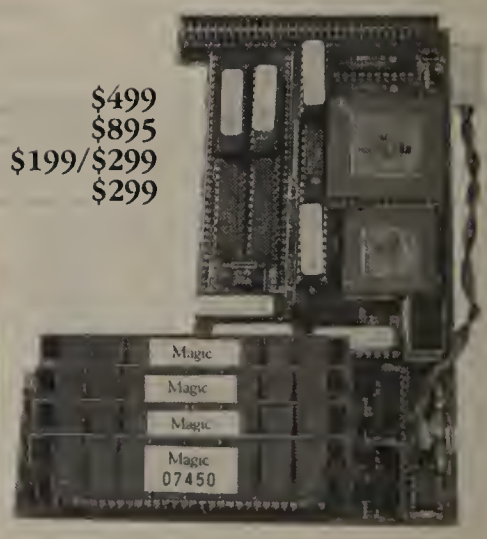
	Internal	External
100 mb CDC	$850	$950
150 mb CDC	$1395	$1495
300 mb CDC	$1995	$2350
600 mb CDC	$3550	$3650
60 mb Tape Backup	$695	
150 mb Tape Backup	$895	
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MacPrint	$78.00
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Master Tracks Pro	$258.00
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Microphone II	$238.00
MicroPlanner Plus	$359.00
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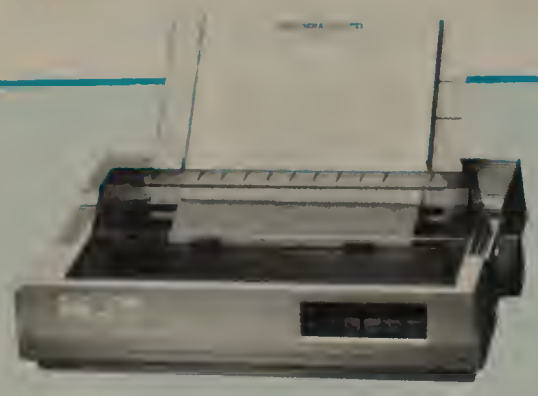
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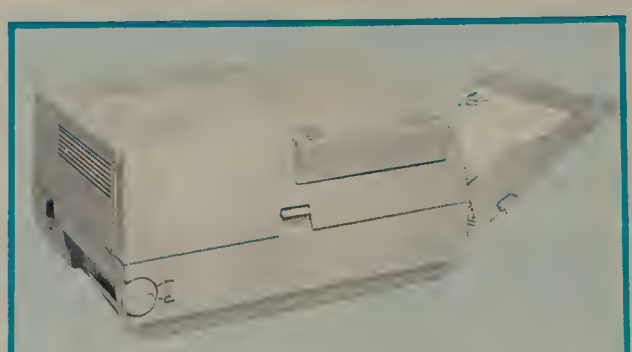
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- Note the name of the person who takes your order, and the time and date of your conversation.
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- Save all correspondence, including your canceled check or money-order carbon and any written confirmation sent by the Seller.

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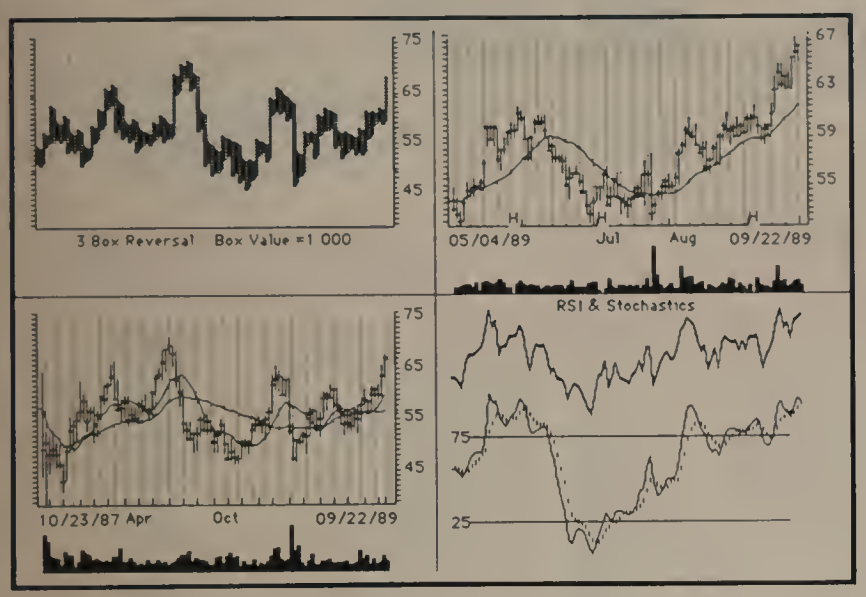
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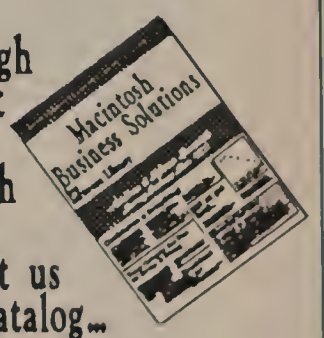
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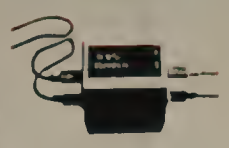
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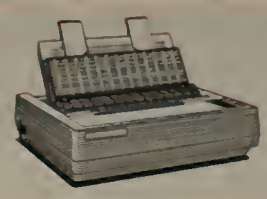
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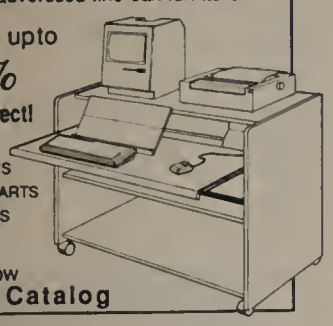
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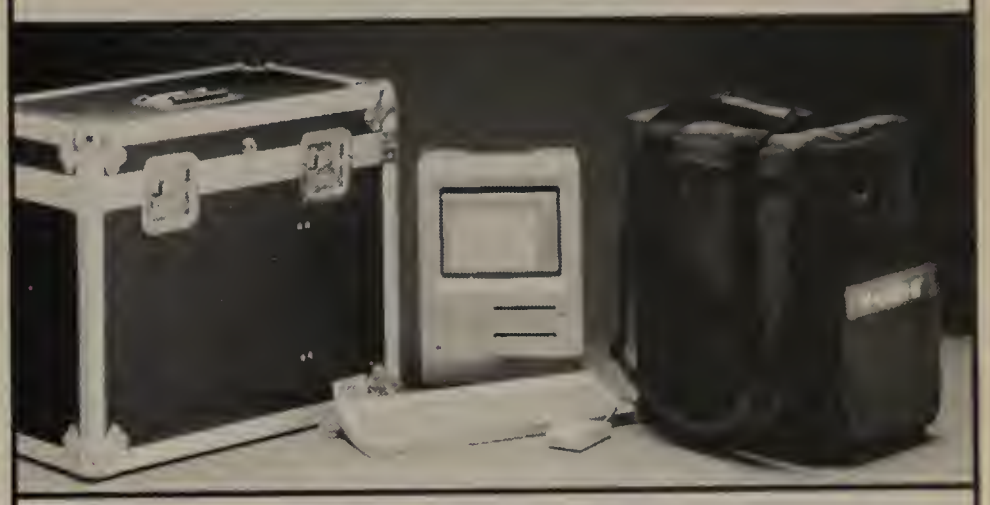


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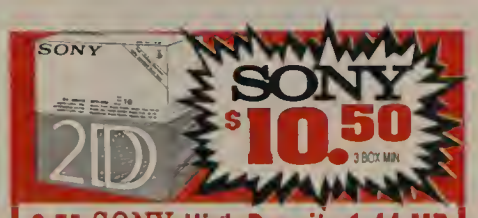


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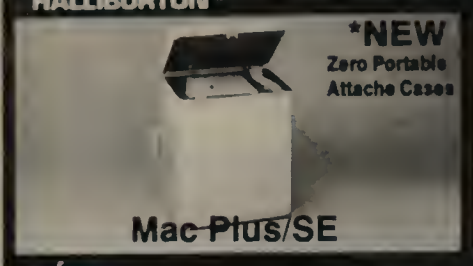
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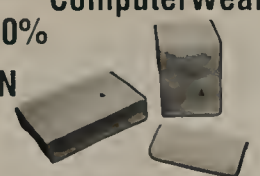
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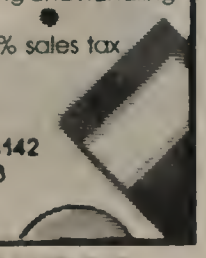
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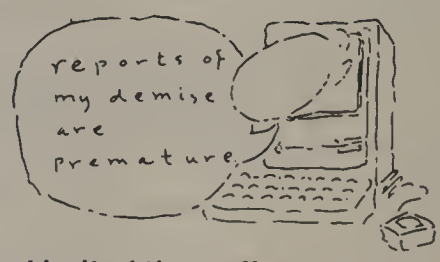
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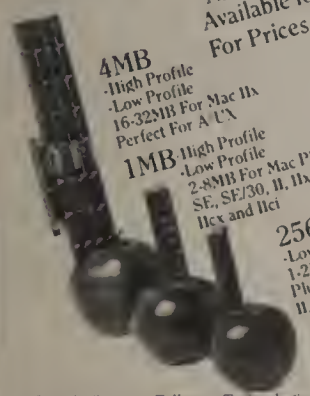
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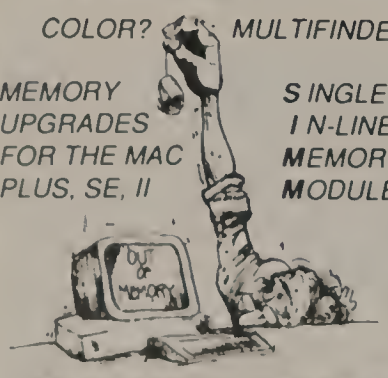
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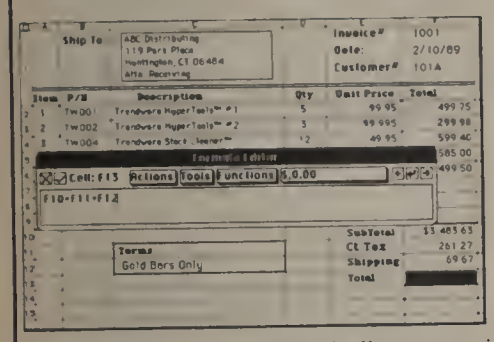
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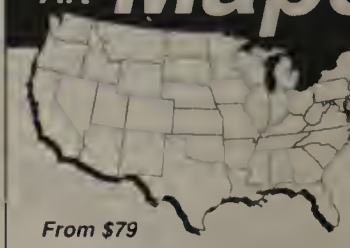
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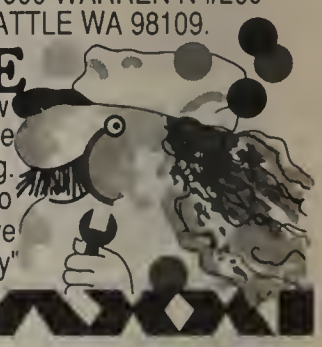
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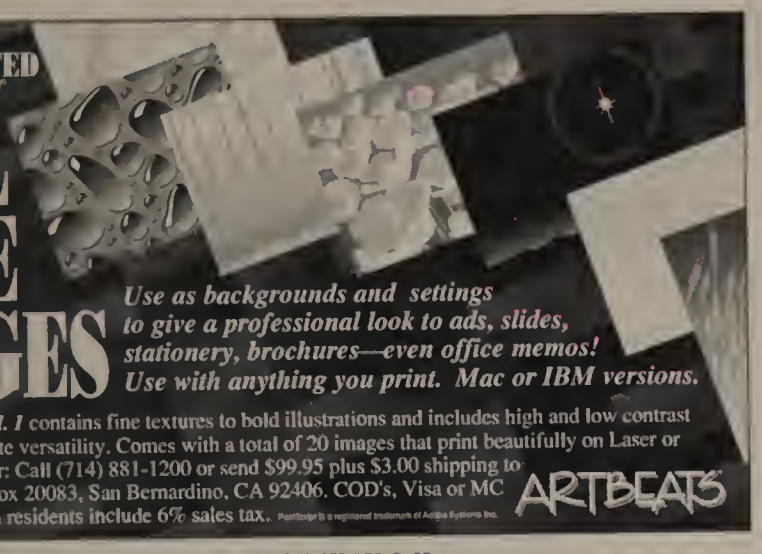
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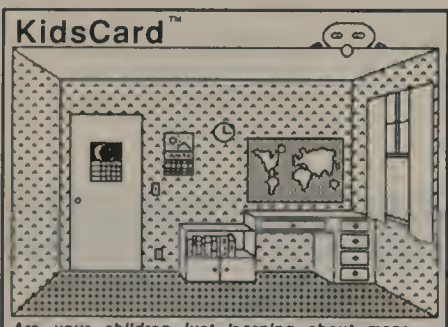
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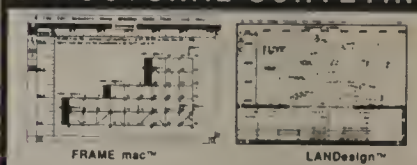
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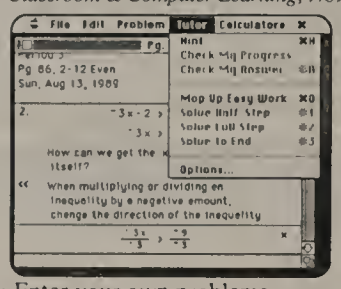
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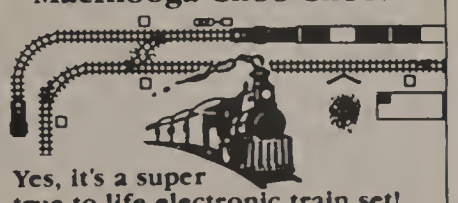
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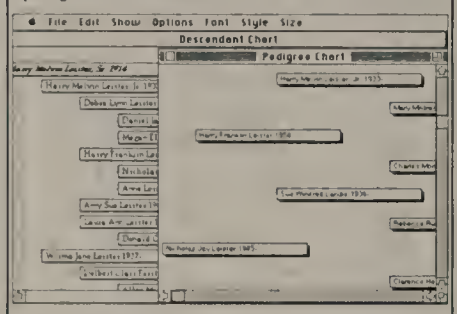
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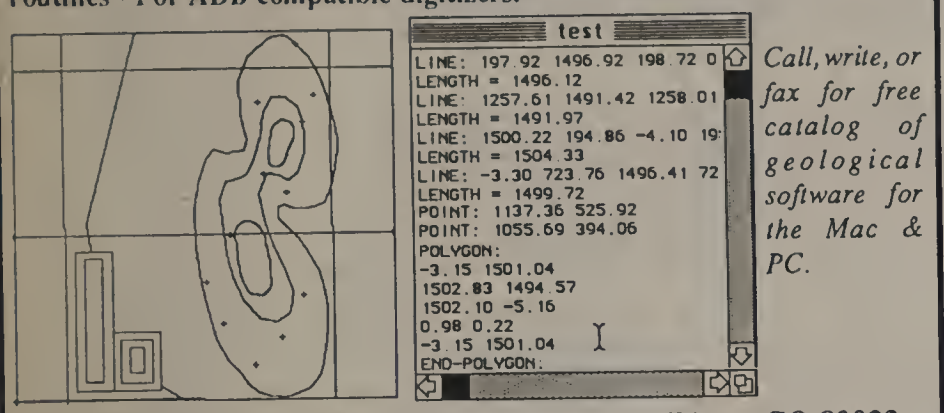
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Months on chart	Last month	This month		
55	1	1	**Microsoft Word**	*Microsoft*
46	2	2	**Microsoft Excel**	*Microsoft*
34	4	3	**Microsoft Works**	*Microsoft*
42	3	4	**Aldus PageMaker**	*Aldus*
31	5	5	**MacWrite**	*Claris*
10	9	6	**QuarkXPress**	*Quark*
8	6	7	**Aldus FreeHand**	*Aldus*
1	—	8	**Wingz**	*Informix*
15	7	9	**WordPerfect for the Macintosh**	*WordPerfect*
12	—	10	**Adobe Illustrator 88**	*Adobe*

EDUCATION SOFTWARE

22	—	1	**Reader Rabbit**	*The Learning Company*
9	3	2	**Where in the World Is Carmen Sandiego?**	*Broderbund*
38	1	3	**Math Blaster**	*Davidson & Associates*
1	—	4	**Math Rabbit**	*The Learning Company*
15	—	5	**Early Games**	*Springboard Software*

ENTERTAINMENT SOFTWARE

38	4	1	**MacGolf**	*PCAI*
37	2	2	**Flight Simulator**	*Microsoft*
34	1	3	**Dark Castle**	*Silicon Beach Software*
6	3	4	**Crystal Quest**	*Casady & Greene*
14	—	5	**Beyond Dark Castle**	*Silicon Beach Software*

NETWORK/DATA COMMUNICATIONS

34	1	1	**TOPS**	*TOPS*
30	2	2	**AppleShare**	*Apple Computer*
23	3	3	**PhoneNet**	*Farallon Computing*
4	—	4	**Netware for the Macintosh**	*Novell*
37	4	5	**LocalTalk**	*Apple Computer*

HARD DISKS*

Months on chart	Last month	This month		
15	1	1	**MacStack SD20**	*CMS Enhancements*
20	5	2	**Rodime 20 Plus External**	*Rodime*
29	4	3	**Apple Hard Disk 20SC**	*Apple Computer*
2	2	4	**EMAC 40 External**	*Everex*
1	—	5	**MacStack SD60**	*CMS Enhancements*

ADD-IN BOARDS/MEMORY

24	5	1	**Radius Accelerator**	*Radius*
12	2	2	**Radius Interface Display**	*Radius*
24	3	3	**Apple 2MB Memory Expansion Kit**	*Apple Computer*
20	—	4	**Apple 1MB Memory Expansion Kit**	*Apple Computer*
12	1	5	**Video Board/Large Screen**	*Ryad*

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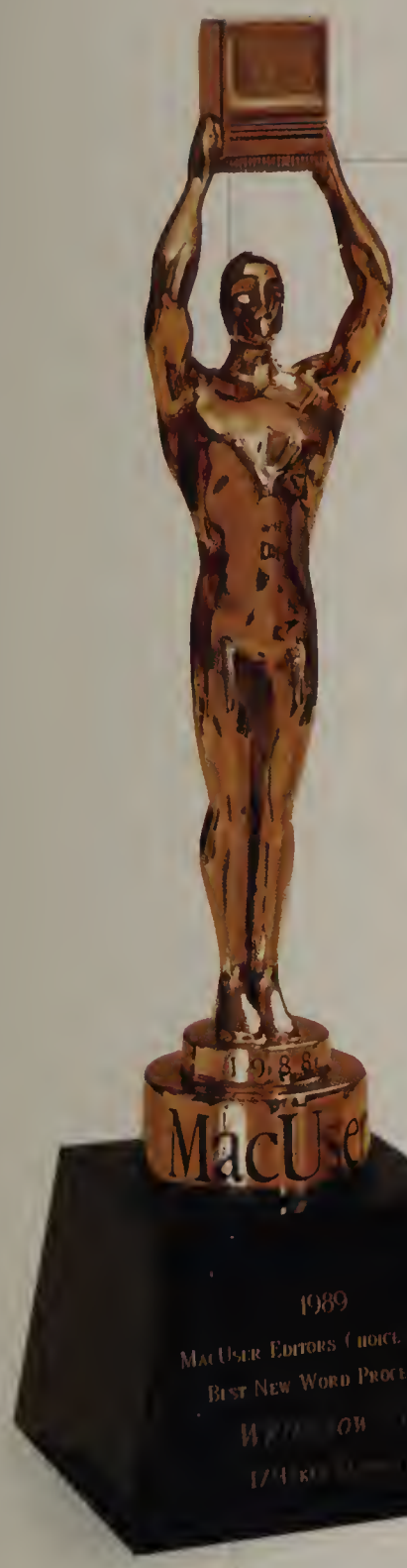
Personal Press *Silicon Beach Software* Low-end page-layout package

PrecisionColor Calibrator *Radius* Optical sensor for display-color calibration

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MS Works 2.0	1 min. 50.8 sec.	35.7 sec.	5 min. 13.4 sec.	2 min. 24.1 sec.	1 min. 14.5 sec.
MS Word 4.0	21.6 sec.	11.0 sec.	3 min. 55.1 sec.	39.4 sec.	25.8 sec.

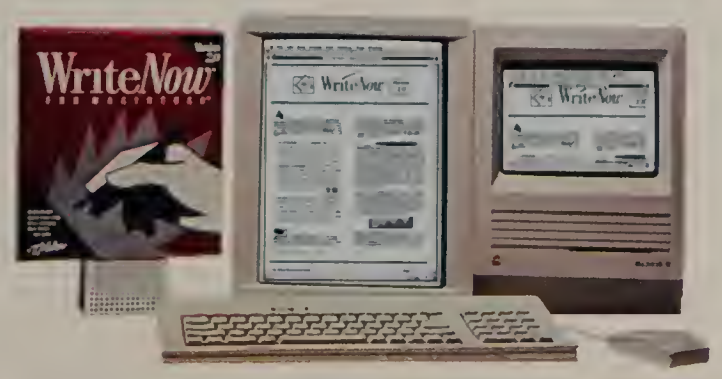
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